
Design Methodology for the Physical Protection Upgrade Rule Requirements for Fixed Sites

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ABSTRACT

This Design Methodology Document aids the licensee in understanding how the fixed site portion of the Physical Protection Upgrade Rule (short title, Upgrade Rule) affects the design of physical protection systems for the sites covered by the rule. The document consists of three major elements: Logic Trees, Safeguards Jobs and Component Matrices, and Effectiveness Test Questionnaires.

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INTRODUCTION

This Design Methodology Document is intended to help licensees understand how the fixed site portion of the Physical Protection Upgrade Rule (short title, Upgrade Rule), will affect the design of physical protection systems for the sites covered by the rule. This document consists of the following three major elements, each of which is described below in more detail:

- Logic Trees
- Safeguards Jobs and Components Matrices
- Effectiveness Test Questionnaires

Logic Trees

A logic tree is an analytical breakdown of one of the required performance capabilities listed in the Upgrade Rule. Each logic tree is intended to show all of the safeguards functions that a licensee's fixed site physical protection system must perform in order to meet the performance capability requirement addressed by the logic tree. The purpose of the logic tree is to divide and subdivide the functions represented by the performance capability requirement into easily understood jobs. At the bottom of the tree a level is reached at which specific safeguards components (i.e., equipment, procedures, or facility design features) can be associated with each job. Thus, the logic trees are designed to conform with the structure of the Upgrade Rule to identify all the jobs that are either implicitly or explicitly contained in the rule's regulatory language.

Matrices

The Safeguards Jobs and Components Matrices are designed to relate known safeguards components (i.e., equipment, procedures, or facility design features),

to the lowest order jobs described in the logic trees. Every job identified in the logic trees is represented in the matrices, and associated with at least one safeguards component. The vertical axis of each matrix lists the jobs, while the horizontal axis lists the components that the Commission staff considers possibly applicable to perform some or all of the jobs listed. The dots found in the body of the matrix indicate the safeguards components considered potentially useful for performing a particular job, subject to site-specific conditions. The series of matrices provided in this document are grouped by major safeguards areas and cover all jobs identified in the logic trees as needing to be performed by the physical protection system.

Effectiveness Test Questionnaires

For each of the safeguards components considered suitable for use in licensed facilities, as identified on the horizontal axes of the matrices, an Effectiveness Test Questionnaire is provided. These questionnaires take the analytical framework provided by the logic trees and matrices one step further by relating the implementation of each safeguards measure to site specific conditions.

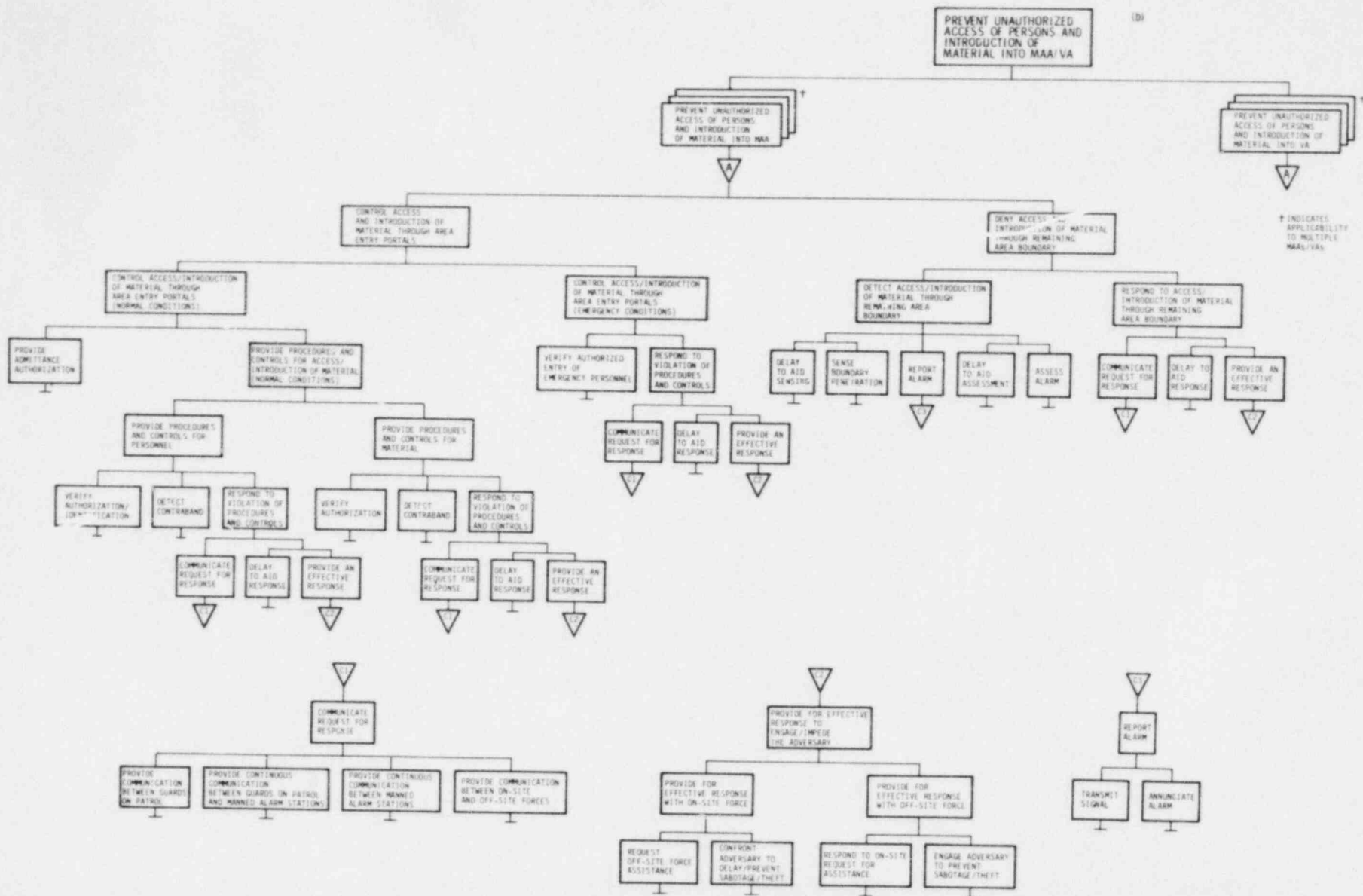
At the beginning of each effectiveness test questionnaire there is a description of the function(s) to be performed by the subject safeguards component. The effectiveness test is written to cover all potential applications of the safeguards component as may be indicated by the multiple entries in the matrix for a single component.

The technical questions in the questionnaires are designed for use as a self-test to aid the licensee in designing a physical protection system best adapted to a particular site. The questions illustrate the type of detailed design considerations the Commission considers in its licensing and inspection

processes. The set of responses that follows each of the questions indicates the possible ways each of the components may be implemented relative to the area of concern addressed by the question, and are listed in descending order of preference by the NRC staff. Although these responses do not necessarily reflect specific regulatory requirements, the first response listed generally corresponds to the way NRC believes the component could be implemented most effectively in most situations. Similarly, the last response listed for a given question is intended to indicate what the NRC would consider the minimally acceptable level of implementation for most situations. The extent to which a particular response is preferred or whether a response is considered at least minimally acceptable, will depend upon the particular conditions at the site and the relationship of the subject component to other parts of the physical protection system (e.g., is the subject measure considered part of a primary subsystem or a back-up subsystem?). A licensing, or inspection and enforcement, determination regarding the minimal acceptability of a particular safeguards measure would require detailed probing by the staff into related safeguards measures to assure adequacy of performance in the specified area.

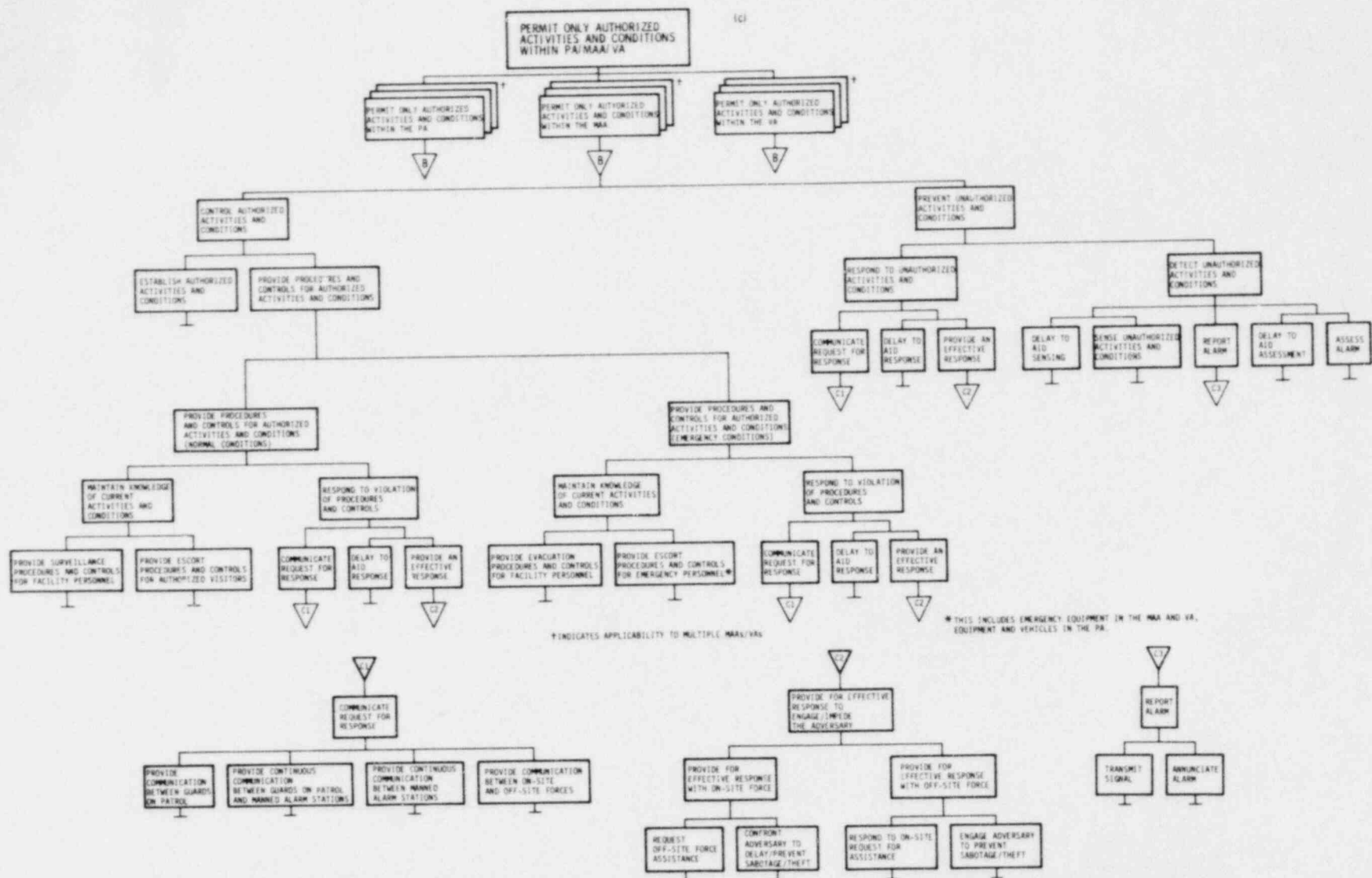
The responses to the questions are provided as an aid to licensees from which they should be able to glean useful information to enable them to select and implement appropriate and effective safeguards equipment, procedures and facility design features. The reader is cautioned, however, that this design methodology document embodies the same unavoidable limitations as any other attempt to commit to written form the collective judgments of groups of individuals with different situations and conditions in mind. Inevitably, especially where the licensee may be considering innovative approaches to safeguards problems, it

may appear that the questions or responses provided do not apply to certain types of equipment being contemplated for use. Also, not all possible responses may have been provided. In such cases, the licensee is encouraged to extrapolate the information contained in the responses to adapt it to the particular component being considered, and the particular conditions existing at the specific site involved.

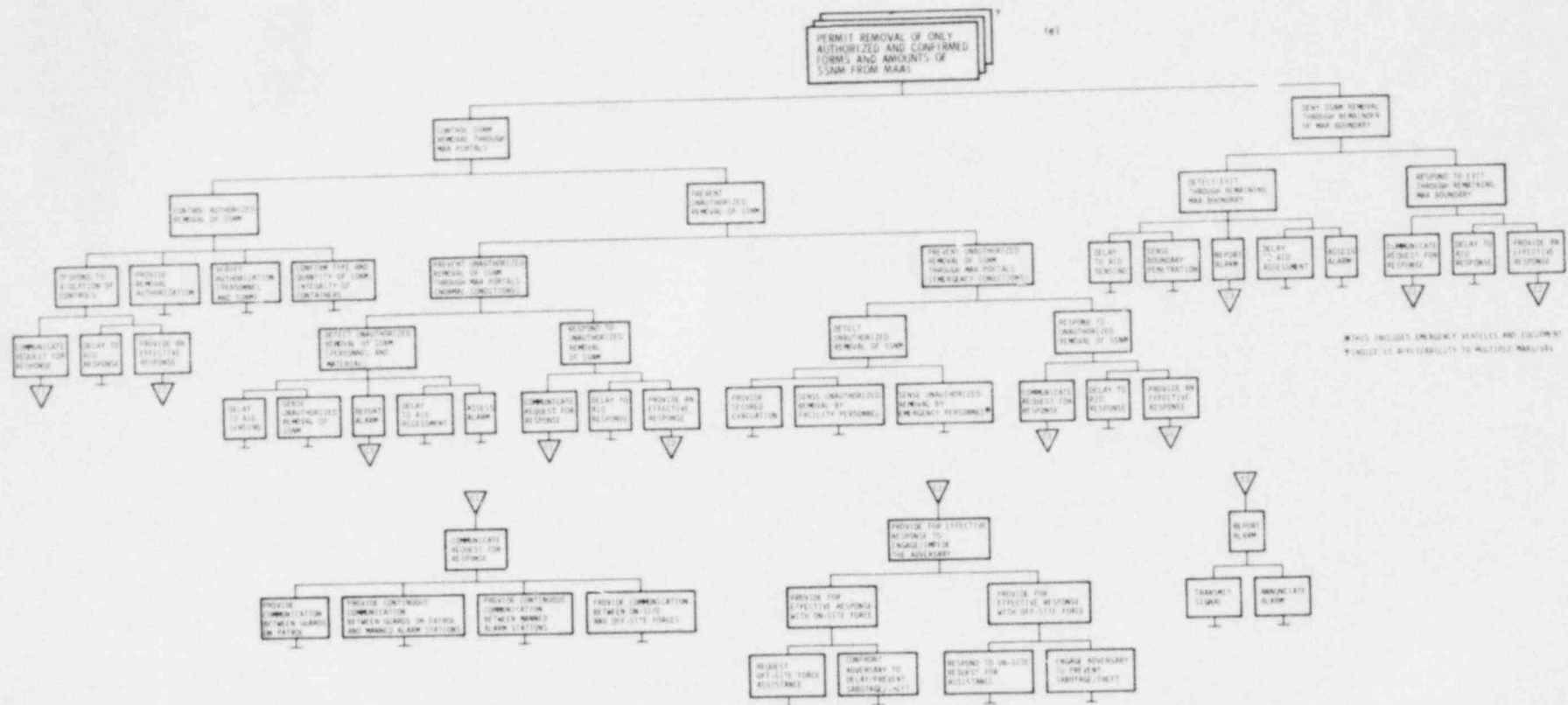


2. LOGIC TREES

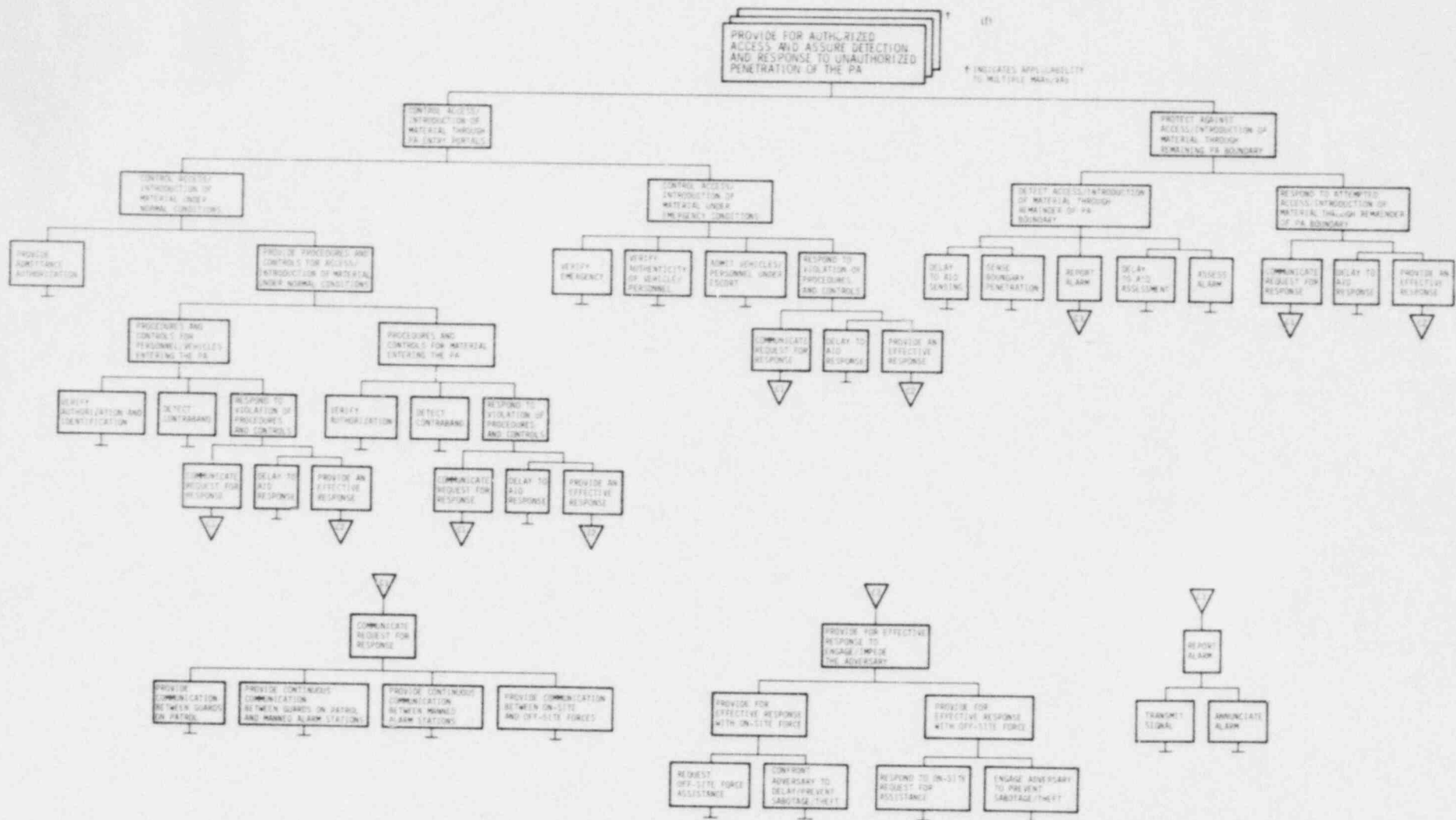
2.1. Performance Capability 73.45(b):
Prevent Unauthorized Access of Persons
and Introduction of Material Into MAA/VA



2.2. Performance Capability 73.45(c):
Permit Only Authorized Activities/
Conditions Within PA/MAA/VA



2.4. Performance Capability 73.45(e):
Permit Removal of Only Authorized and
Confirmed Forms and Amounts of SSNM
From MAA's



2.5. Performance Capability 73.45(f):
Provide for Authorized Access, and
Assure Detection and Response to
Unauthorized Penetration of the PA

ALARM REPORTING AND ASSESSMENT	EQUIPMENT AND/OR DESIGN FEATURES	PROCEDURES
PERFORMANCE CHARACTERISTICS		
TRANSMIT SIGNAL	COMPUTER - ASST'D ANNUNCIATORS INDIVIDUAL ALARM ANNUNCIATORS MULTIPLE ALARM ANNUNCIATORS CONTROLLED SECURITY LIGHTING CENTRAL & SECONDARY ALARM STATIONS INDIVIDUAL HARDWARE ALARMS MULTIPLE HARDWARE ALARMS HARDWARE COMMAND SIGNALS DATA LINK VIA RADIO SYSTEMS LOCAL AUDIO/VISIBLE ALARMS NIGHT VISION DEVICES EMERGENCY BATTERY SYSTEMS EMERGENCY GENERATOR SYSTEMS UNINTERRUPTIBLE POWER SYSTEMS EQUIPMENT CHECKS/MAINTENANCE	GUARD PATROLS MANUAL ALARM RECORDING DIRECT MONITORING/SURVEILLANCE CCTV MONITORING/SURVEILLANCE
ANNUNCIATE ALARM	INDIVIDUAL ALARM ANNUNCIATORS MULTIPLE ALARM ANNUNCIATORS CONTROLLED SECURITY LIGHTING CENTRAL & SECONDARY ALARM STATIONS INDIVIDUAL HARDWARE ALARMS MULTIPLE HARDWARE ALARMS HARDWARE COMMAND SIGNALS DATA LINK VIA RADIO SYSTEMS LOCAL AUDIO/VISIBLE ALARMS NIGHT VISION DEVICES EMERGENCY BATTERY SYSTEMS EMERGENCY GENERATOR SYSTEMS UNINTERRUPTIBLE POWER SYSTEMS EQUIPMENT CHECKS/MAINTENANCE	GUARD PATROLS MANUAL ALARM RECORDING DIRECT MONITORING/SURVEILLANCE CCTV MONITORING/SURVEILLANCE
ASSESS ALARM	COMPUTER - ASST'D ANNUNCIATORS INDIVIDUAL ALARM ANNUNCIATORS MULTIPLE ALARM ANNUNCIATORS CONTROLLED SECURITY LIGHTING CENTRAL & SECONDARY ALARM STATIONS INDIVIDUAL HARDWARE ALARMS MULTIPLE HARDWARE ALARMS HARDWARE COMMAND SIGNALS DATA LINK VIA RADIO SYSTEMS LOCAL AUDIO/VISIBLE ALARMS NIGHT VISION DEVICES EMERGENCY BATTERY SYSTEMS EMERGENCY GENERATOR SYSTEMS UNINTERRUPTIBLE POWER SYSTEMS EQUIPMENT CHECKS/MAINTENANCE	GUARD PATROLS MANUAL ALARM RECORDING DIRECT MONITORING/SURVEILLANCE CCTV MONITORING/SURVEILLANCE
MAINTAIN EQUIPMENT IN OPERATING CONDITION	COMPUTER - ASST'D ANNUNCIATORS INDIVIDUAL ALARM ANNUNCIATORS MULTIPLE ALARM ANNUNCIATORS CONTROLLED SECURITY LIGHTING CENTRAL & SECONDARY ALARM STATIONS INDIVIDUAL HARDWARE ALARMS MULTIPLE HARDWARE ALARMS HARDWARE COMMAND SIGNALS DATA LINK VIA RADIO SYSTEMS LOCAL AUDIO/VISIBLE ALARMS NIGHT VISION DEVICES EMERGENCY BATTERY SYSTEMS EMERGENCY GENERATOR SYSTEMS UNINTERRUPTIBLE POWER SYSTEMS EQUIPMENT CHECKS/MAINTENANCE	GUARD PATROLS MANUAL ALARM RECORDING DIRECT MONITORING/SURVEILLANCE CCTV MONITORING/SURVEILLANCE
PROVIDE AUXILIARY POWER	COMPUTER - ASST'D ANNUNCIATORS INDIVIDUAL ALARM ANNUNCIATORS MULTIPLE ALARM ANNUNCIATORS CONTROLLED SECURITY LIGHTING CENTRAL & SECONDARY ALARM STATIONS INDIVIDUAL HARDWARE ALARMS MULTIPLE HARDWARE ALARMS HARDWARE COMMAND SIGNALS DATA LINK VIA RADIO SYSTEMS LOCAL AUDIO/VISIBLE ALARMS NIGHT VISION DEVICES EMERGENCY BATTERY SYSTEMS EMERGENCY GENERATOR SYSTEMS UNINTERRUPTIBLE POWER SYSTEMS EQUIPMENT CHECKS/MAINTENANCE	GUARD PATROLS MANUAL ALARM RECORDING DIRECT MONITORING/SURVEILLANCE CCTV MONITORING/SURVEILLANCE

Matrix IV - Alarm Reporting and Assessment

4.0 EFFECTIVENESS TEST QUESTIONNAIRES

4.1 Admittance Authorization Criteria and Schedules

FUNCTION

The function of this procedure will be to establish criteria, i.e., standards, to be employed in granting admittance authorization to personnel and vehicles and admittance authorization for introduction of non-nuclear material into the PA, MAAs, and VAs and to develop schedules of permissible admittance times.

DEVELOPMENT CRITERIAPersonnel

1. How will criteria be developed for granting admittance authorization to personnel?
2. How will admittance schedules be established?

Vehicles

3. How will criteria be developed for granting admittance authorization to vehicles?
4. How will admittance schedules be established?

Material

5. How will criteria be developed for granting authorization for introduction of materials?

ANSWERSDEVELOPMENT CRITERIAPersonnel

1.
 - a. Criteria for admittance authorization to personnel will be developed on the basis of a detailed analysis of the facility's operational and support requirements.
 - b. Criteria will be established based only on the critical areas to which admittance is required, not on the basis of the tasks to be performed.
 - c. No established criteria will exist, therefore authorization will be granted on a case-by-case basis as admittance authorization is requested.
2.
 - a. Schedules will be established by defining a time "window" for each person authorized access to a critical area.
 - b. Schedules will be established on a very general basis and for support personnel and visitors only.
 - c. No established schedules will exist.

Vehicles

3.
 - a. Criteria for admittance authorization to vehicles will be developed on the basis of a detailed analysis of the facility's operational and support requirements, or vehicles will not be authorized.
 - b. Criteria will be established based only on the critical area to which admittance of the vehicle is requested, i.e., vehicles are allowed only into the PA, not into MAAs or VAs, and on personnel authorized to operate the particular vehicle.
 - c. No established criteria will exist, therefore authorization will be granted on a case-by-case basis as admittance authorization is requested.
4.
 - a. Schedules will be established by defining a time "window" for each vehicle to be authorized admittance and for identifying personnel who will be authorized to operate the particular vehicle, or vehicles will not be authorized.
 - b. Schedules will be established as in a., but will not include assignment of specific personnel to specific vehicles.
 - c. No established schedules will exist.

Material

5.
 - a. Criteria for authorized introduction of material will be based upon a detailed analysis of the facility's requirements and will include an analysis of safeguards considerations; e.g., if a particular type of material will be needed in a critical area, but could also be used for sabotage, the material will be kept inside the area instead of being brought in every time it is needed.
 - b. Criteria for authorized introduction of material will be based on a cursory analysis of the facility's requirements.
 - c. No established criteria will exist other than disallowing weapons and explosives in critical areas.

4.2 Admittance Authorization/Verification Procedures

FUNCTION

The function of this procedure will be to provide a means for authorizing the admittance of personnel and vehicles and the introduction of non-nuclear material into the facility and verifying admittance authorization.

CONDITIONS

1. How often will admittance authorization papers be reviewed and updated?
2. What precautions will be taken to minimize the possibility of authorization papers being altered or introduced by unauthorized personnel?

Personnel Admittance

Employee Admittance

3. How will admittance authorization be originated?
4. Will security checks for employees who will have access to SSNM and vital components be more comprehensive than for other employees?
5. What type of information will be included in employee admittance authorization?
6. What will be the primary procedure for verifying ID and admittance authorization?

Visitor Admittance

7. How will admittance authorization for visitors be originated?
8. What type of information will be included in visitor authorization?
9. What procedure will be used to verify the visitor's admittance authorization?

Vehicle Admittance

10. How will admittance authorization for vehicles be originated?
11. What type of information will be included in the vehicle admittance authorization?
12. What procedure will be used to verify vehicle admittance authorization?

Material Admittance

13. How will material purchase orders and admittance authorization be originated?
14. Will all material shipments into the facility be cleared through a central material receiving point?
15. What procedure will be used for verifying admittance authorization for material shipments?

Related Questionnaires

16. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Admittance Authorization Criteria and Schedules.

ANSWERSCONDITIONS

1.
 - a. At least once per year or more often to accommodate changes in employment status or job assignment.
 - b. Once every 2 to 3 years.
 - c. Less often than every 3 years.
2.
 - a. Authorization will be stored in a safe and will always be hand-carried from one location to another.
 - b. Authorization will be stored in a locked file cabinet and will always be hand-carried from one location to another; or it will be stored in a safe, but the facility mail channels will be used for transfer from one location to another.
 - c. Authorization papers will be handled identically to normal office paperwork, no additional precautions will be taken.

Personnel AdmittanceEmployee Admittance

3.
 - a. Admittance authorization will originate with the facility's personnel department supervisor and will be routed through the employee's work supervisor for approval.
 - b. Authorization will originate with the employee's work supervisor and will be routed through the personnel department for approval.
 - c. Authorization will originate with the facility's personnel department.
4.
 - a. Yes.
 - b. No.
5.
 - a. Photograph, physical description, positive personnel identifiers (fingerprints, voiceprints, etc.) area(s) to which employee is authorized admission, and time during which authorization is in effect.
 - b. Same as a., but no time specified.
 - c. Same as b., but no physical description or time specified.
6.
 - a. Positive personnel ID.
 - b. Coded credential system.
 - c. Personnel ID numbers/passwords.
 - d. Photo ID badges.

Visitor Admittance

7.
 - a. Authorization will originate within the security organization at the request of the visitor's supervisor and be routed through the supervisor of the area to be visited.
 - b. Authorization will originate within the security organization at the request of the visitor or the internal contact at the facility to be visited.
 - c. Authorization will originate with the internal contact or the visitor and be routed through the organization to be visited.
8.
 - a. Photograph, physical description, area(s) to which admittance is authorized, duration of authorization, and identification of internal contact.
 - b. Same as a. except no duration of authorization or identification of internal contact provided.
 - c. Same as b. except either photograph or physical description.
9.
 - a. Before the request for authorization is granted, a call will be placed to the visitor's security organization for verification. When the visitor arrives, he will be asked to provide a photo ID, e.g., a driver's license, and the schedule for visitors expected at the facility will be checked.
 - b. When the visitor arrives, he will be asked to provide a photo ID, and the schedule for visitors expected at the facility will be checked.
 - c. When the visitor arrives, he will be asked to provide some form of identification, and the internal contact will be notified.

Vehicle Admittance

10.
 - a. Authorization will originate with the security organization at the request of the work area supervisor, or vehicles will not be authorized.
 - b. Authorization will originate with the security organization at the request of the vehicle operator.
 - c. Authorization will originate with the work area supervisor.
11.
 - a. Vehicle year, make, and model; license plate number; operator's identification; area to which vehicle is authorized admission; and duration of authorization, or vehicles will not be authorized.
 - b. Same as a. except no duration of authorization specified.
 - c. Same as b. and operator's identification is not verified.

12. a. The vehicle description, license plate number, and the operator's ID will be checked against an approved list and schedule of authorized vehicles and operators to be admitted at that entry control point, or vehicles will not be authorized.
- b. The vehicle description and the operator's ID will be checked against an approved list of authorized vehicles and operators to be admitted.
- c. Only the operator's ID and admittance authorization will be checked.

Material Admittance

13. a. Authorization will originate with the material procurement organization at the request of the work area supervisor, subject to approval by the security organization.
 - b. Authorization will originate with the work area supervisor, subject to approval by the material procurement organization.
 - c. Authorization will originate with the work area supervisor.
14. a. Yes.
 - b. No.
15. a. The material shipment will be checked against an approved list of authorized material shipments expected at the facility. The shipping and receiving organizations and shipment description will also be checked against the order forms on file.
 - b. The shipment will be checked against an approved list of authorized material shipments expected at the facility.

4.3 Air and Utility Inlet Barriers

FUNCTION

The function of the utility inlet barrier will be to delay the adversary in order to aid detection, assessment, and response.

CONDITIONS

Site Conditions

1. At what height will the inlet barrier terminate?
2. What is the size of the inlet?

Performance Conditions

3. What type barrier(s) will be employed to delay penetration?
4. What is the material of construction?
5. How is the barrier anchored around the inlet?
6. What will be the probable penetration time for the utility inlet barrier?
7. Will the penetration time(s) for the inlet barrier be equivalent to that for the adjacent barriers?

Vulnerabilities

Adversary Attributes

8. What classes of tools will correspond to the above penetration time(s) for penetration of the air and/or utility inlet barriers?
9. What number of persons carrying out the penetrations are associated with the above penetration time(s)?

ANSWERSCONDITIONSSite Conditions

1.
 - a. >10 feet above ground.
 - b. <10 feet above ground.
 - c. At ground level.
2.
 - a. < 96 sq in.
 - b. \geq 96 sq in.

Performance Conditions

3.
 - a. Steel bar grill.
 - b. Sheet Metal.
 - c. Locked access cover.
 - d. Other (specify).
4.
 - a. Greater than or equal to 3/4-inch-diameter bars less than or equal to 6 inches on centers.
 - b. Less than 3/4-inch bars or greater than 6 inches on centers.
 - c. Barbed tape.
 - d. 18-24 gage sheet metal.
 - e. Other (specify).
5.
 - a. Welded.
 - b. Bolted.
 - c. Concrete imbedded.
6. (specify).
7.
 - a. Yes.
 - b. No.

VulnerabilitiesAdversary Attributes

8.
 - a. Explosives.
 - b. Thermal cutting tools.
 - c. Powered handtools.
 - d. Handtools.
9.
 - c. 1.
 - b. 2.
 - a. 3 or more.

4.4 Annunciation Systems

- Computer Assisted Annunciation
- Individual Alarm Annunciation
- Multiplex Alarm Annunciation

FUNCTION

The function of the annunciation system will be to alert security personnel to alarm activation.

CONDITIONS

Performance Conditions

Installation

1. Where will peripheral equipment such as computers and communications electronics be located?

Operation

2. How much console space will be occupied by primary controls and displays that require observation or action several times per shift?
3. Where will the primary control and display area be situated with respect to the operator?
4. Where will all primary controls be located with respect to their accessibility to the operator?
5. How will the operator's attention be directed to the annunciators?
6. Will security annunciators be monitored by the same operator who monitors other annunciators?
7. Will the status of sensors (secure/access/alarm/tamper) within a security zone be available to the operator?
8. How will the importance or priority of an alarm be determined?
9. When an alarm occurs, to what extent will the sensor's location be available to the operator?
10. What additional information will be available to the operator if an alarm occurs?
11. To what extent will the annunciation system indicate multiple concurrent alarms?

12. How will significant events be recorded?

Reliability

13. How frequently will the system be checked for proper operation?
14. What provisions will be made to maintain operational capabilities when critical elements, i.e., CPU, CRT, audio and visual devices, fail?
15. If the system is equipped with self-test capability, what will be the test frequency?

Vulnerabilities

16. What techniques will be used to deter unauthorized modification of programs or data?

ANSWERSCONDITIONSPerformance ConditionsInstallation

1.
 - a. In a separate access-controlled room.
 - b. In the same room but away from primary display and control area.
 - c. In the same console area as the primary displays and controls.

Operation

2.
 - a. Less than 250 square inches.
 - b. 250 to 700 square inches.
 - c. 700 to 1700 square inches.
 - d. More than 1700 square inches.
3.
 - a. Approximately perpendicular to a seated operator's line of sight.
 - b. In a vertical plane.
 - c. In a horizontal plane.
4.
 - a. Completely within convenient reach of the operator.
 - b. Partially within the operator's reach.
 - c. Not within reach from the operator's normal location and will require the operator to move from his location.
5.
 - a. By an audible signal which varies depending on type of alarm plus visual indicators.
 - b. By an unchanging audible signal plus visual indicators.
 - c. By visual indicators only.
6.
 - a. No.
 - b. Yes.
7.
 - a. The status of each sensor will be available.
 - b. The most significant status within a group of sensors will be available.
 - c. The most significant status within the security zone will be indicated.
 - d. Only the occurrence of an alarm will be indicated.
8.
 - a. Automatically, by a hardware or software priority structure.
 - b. By the operator in a predetermined priority structure.
 - c. By the operator using real-time judgment.

9.
 - a. The location of the specific sensor in alarm will be available.
 - b. The location of the sensor group containing the specific sensor in alarm will be available.
 - c. The location of the general area containing the specific sensor in alarm will be available.
10.
 - a.
 - (1) The time of alarm,
 - (2) The priority of alarm,
 - (3) Emergency telephone numbers,
 - (4) Special precautionary instructions associated with a zone, and
 - (5) Area maps.
 - b. (1), (2), (3), and (4) above.
 - c. (1), (2), and (3) above.
 - d. (1) and (2) above.
 - e. Only (2) above.
11.
 - a. It will advise the operator of multiple concurrent alarms.
 - b. It will permit only a sequential display of multiple concurrent alarms.
 - c. It will display only one of multiple concurrent alarms.
12.
 - a. They will be automatically printed out.
 - b. They will be recorded automatically and manually in combination.
 - c. They will be manually recorded.

Reliability

13.
 - a. Every few seconds.
 - b. Every few minutes.
 - c. Every few hours.
 - d. Once per shift.
 - e. Once per day.
 - f. Once per week.
 - g. Less than once per week.
14.
 - a. A fully redundant system of annunciation is to be provided.
 - b. Full redundancy is to be provided for all critical subsystems and computers.
 - c. Significant increase of patrols will be provided.

15.
 - a. At 10- to 30-second intervals.
 - b. At 30- to 60-second intervals.
 - c. At 1- to 5-minute intervals.
 - d. The system will not have self-test capability.

16.
 - a. By encryption.
 - b. By multiple passwords.
 - c. By single password.
 - d. By administrative controls.
 - e. None.

4.5 Area Zoning

FUNCTION

The function of area zoning will be to minimize collusion by establishing work rules restricting employees to only those areas where they have responsibilities and a need to go.

CONDITIONS

Site Conditions

1. Will the facility be configured so that work areas can be defined by layered zones surrounding special nuclear materials (SNM) or vital equipment?
2. Will adjacent zones be adjoined by a physical barrier with entry/exit controls?

Performance Conditions

3. Will the work rules limit the amount of control an individual is permitted to have over the safeguards in more than one zone?
4. Will the work rules limit an individual's access to the zones?
5. Will individuals be permitted to rotate duties involving other zones?
6. In defining the work rules, was the effect on employee morale taken into account?
7. What level of independence exists between the classes of employees who control safeguards in the zones?
8. To what type personnel do the work rules apply?
9. Do the work rules separate the above type personnel into separate classes?
10. For each zone, what type activity will each class of employees be permitted to undertake?
11. Will the work rules present a hindrance to emergency responses?
12. Will the work rules provide a hindrance to the operation of safety systems?
13. Are there other work rules being used in addition to those for Area Zoning?
14. Is the "2-Man Rule" also used?

ANSWERSCONDITIONSSite Conditions

1. a. All work areas surrounding special nuclear materials (SNM) or vital components or vital components will be clearly defined by multiple layered zones.
- b. Some areas surrounding SNM or vital components cannot be defined by multiple zones, but in such cases other procedures will be employed to limit collusion opportunity.
- c. Only the most critical areas can be defined by multiple zoning.
2. a. Zones will be fully bounded by substantial barriers and an intrusion detection system; stringent entry and exit controls will be exercised.
- b. Zone boundaries will be defined; intrusion detection sensors will be employed; and entry and exit controls will be exercised.
- c. Zone boundaries will be readily visible and the points of ingress and egress will be clearly marked; entry and exit controls will be exercised.

Performance Conditions

3. a. No single individual will be permitted to control safeguards in more than one zone.
- b. No single individual will be permitted to control safeguards in all zones.
- c. Certain key management personnel will be permitted to control safeguards in all zones.
- d. Key management personnel, key operation and maintenance personnel and key security personnel will be permitted to control safeguards in all area zones.
4. a. No single individual will be permitted free access to more than one zone.
- b. No single individual will be permitted free access to all zones.
- c. Key management personnel, i.e., plant managers and security managers, will be permitted access to all zones.

- d. Key management personnel and key operation and maintenance personnel will be permitted free access to all zones.
- 5.
- a. Rotation between zones will not be permitted.
 - b. Rotation between zones is permitted only if the functions are different.
 - c. Rotation between zones is permitted only if the time period exceeds the accounting period.
 - d. Rotation is permitted on a case-by-case basis.
- 6.
- a. Yes.
 - b. No.
- 7.
- a. Safeguards in each zone will be controlled by a different class of employee.
 - b. Safeguards in adjacent zones will be controlled by different classes of employees.
 - c. Safeguards in all zones will be controlled by a single class of employee.
- 8.
- a. Management, supervisory, operation and maintenance, security.
 - b. Security, operation and maintenance.
 - c. Operation and maintenance.
 - d. Management and supervisory.
- 9.
- a. Yes.
 - b. No.
- 10.
- a. Work in the zone.
 - b. Passage through the zone only.
 - c. Work in and passage through the zone.
- 11.
- a. No.
 - b. Yes.
- 12.
- a. No.
 - b. Yes.
- 13.
- a. Yes, Functional Zoning and Team Zoning.
 - b. Yes, Functional Zoning.
 - c. Yes, Team Zoning.
 - d. No.
- 14.
- a. Yes.
 - b. No.

4.6 Balanced Magnetic Switch

FUNCTION

The function of the balanced magnetic switch will be to sense intrusions through doors and/or windows.

CONDITIONS

Site Conditions

Physical

1. What type of materials will be used for doors, windows, and frames?
2. How will the doors and windows fit?

Environmental Conditions

3. What provisions will be made to ensure detection during vibration-producing winds?
4. If any manmade conditions such as accumulation of foreign matter on doors and windows are expected to occur, what provisions will be made to ensure proper operation of the switches?

Performance Conditions

Installation

5. If the switches are installed on ferrous metal surfaces, will a determination of the effect of the metal on switch performance be made for the particular brand of switch that will be used?
6. Will the switches be mounted inside the protected area?
7. Will all wiring be placed in conduit?

Operation

8. How frequently will the switch be checked for proper operation?
9. How will the periodic check be achieved?

Maintenance

10. Will preventive maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?

Reliability

11. If the switches have a self-test capability, what will be the test frequency?

Vulnerabilities

12. Will the system be constructed so that access to it by an adversary will be difficult?

Related Questionnaires

13. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Equipment Checks/Maintenance
 - b. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite ConditionsPhysical

1.
 - a. Nonferrous metal.
 - b. Wood.
 - c. Ferrous metal (magnetic switches work poorly or not at all).
2.
 - a. Tightly (as airlock).
 - b. Well (less than 2 millimetres free play).
 - c. Poorly (more than 3 millimetres free play).

Environmental Conditions

3.
 - a. Either vibration-producing winds are not expected to be a problem, they will occur infrequently, or doors and windows will be constructed so that wind will not affect them.
 - b. Another sensor will be used to detect door and window intrusions when vibration-producing winds occur.
 - c. No provisions will be made.
4.
 - a. Either the manmade environment is expected to be stable or door and window openings will be kept clean to ensure proper operation.
 - b. No provisions will be made.

Performance ConditionsInstallation

5.
 - a. Yes, since switches might fail under these conditions, or the switches will not be installed on ferrous metal surfaces.
 - b. No.
6.
 - a. Yes.
 - b. No.
7.
 - a. Yes.
 - b. No.

Operation

8.
 - a. At least once per guard shift.
 - b. No more than once per day.
 - c. No more than once per week.
 - d. Only when trouble is suspected.
9.
 - a. By remote test, together with an operational test, i.e., opening the door, by guards.
 - b. Operationally by guards as they make their rounds.
 - c. By remote test.

Maintenance

10.
 - a. Yes.
 - b. No.

Reliability

11.
 - a. At 10- to 30-second intervals.
 - b. At 30- to 60-second intervals.
 - c. At 1- to 5-minute intervals.
 - d. Switches will not have a self-test capability.

Vulnerabilities

12.
 - a. The entire system will be enclosed in conduit, within walls.
 - b. The system will be in conduit.
 - c. The system is open once the adversary gains entry.
 - d. The system uses unprotected telephone lines.

4.7 Breakwire System (Foil Strip and Grid Wire)

FUNCTION

The function of the breakwire system will be to sense intrusions through walls, ceilings, floors, doors, windows, or other barriers.

CONDITIONS

Site Conditions

1. What type of material will be used in the construction of the barrier to which the breakwire system will be attached?

Environmental Conditions

2. Will extreme temperature changes, which could cause false alarms, be expected to occur at the facility?

Performance Conditions

Installation

3. How will the breakwire system be installed relative to the barrier?
4. Will the electrical installation of the breakwire system satisfy the requirements specified in UL681 (Installation and Classification of Mercantile and Bank Burglar Alarm Systems)?

Reliability

5. What procedure will be followed for periodically checking the breakwire system?
6. How often will the breakwire system undergo such a check?
7. If the breakwire system has a self-test capability, what will be the test frequency?

Vulnerabilities

Adversary Attributes

8. Will the breakwire system be installed so that it is not readily observed by an intruder?

Related Questionnaires

9. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Equipment Checks/Maintenance
 - b. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite Conditions

1.
 - a. Concrete, cinder block, or plaster with fire-resistant wood frames.
 - b. Fire-resistant wood foundation or frame.
 - c. Wood foundation or frame.

Environmental Conditions

2.
 - a. No.
 - b. Yes.

Performance ConditionsInstallation

3.
 - a. It will be installed inside the barrier, e.g., grid woven into window screen.
 - b. It will be installed on the barrier surface with fire-resistant wood panels over the breakwire, e.g., grid wire on a window frame under a wood panel.
 - c. It will be installed on the barrier surface, e.g., foil strip applied to a window frame.
4.
 - a. Yes.
 - b. No.

Reliability

5.
 - a. The system will be inspected for wear and be operationally tested.
 - b. The system will be inspected for wear.
 - c. The breakwire system will be checked only when a problem is suspected.
6.
 - a. At least once every 3 months.
 - b. Every 3 to 6 months.
 - c. Less often than once every 6 months or not at all.
7.
 - a. At 10- to 30-second intervals.
 - b. At 30- to 60-second intervals.
 - c. At 1- to 5-minute or greater intervals.
 - d. The breakwire system will not have a self-test capability.

VulnerabilitiesAdversary Attributes

8.
 - a. Yes.
 - b. No.

4.8 Buried Line Sensors

- Seismic
- Magnetic
- Geophone String
- Piezo-electric Button String

FUNCTION

The function of the buried line sensor will be to sense intrusions through the fence or isolation zone.

CONDITIONS

Site Conditions

1. If the detection zone terrain has any abrupt disturbances (ditches, gullies, etc.), will they be leveled, filled, or otherwise properly prepared?
2. What will be done to determine how soil type at the site location might affect sensor performance?
3. What provisions will be made to minimize nuisance alarms which might be caused by portal traffic, gate movement, or roving guards?

Environmental Conditions

Natural

4. If environmental conditions (e.g., wind, rain, snow, extreme heat, freezing and thawing) which could adversely affect the sensors are expected to occur at least 5 percent of the time, what provisions will be made to ensure detection under these conditions?
5. If wildlife will be present at the site, what provisions will be made to minimize nuisance alarms?
6. If the planned perimeter is near any running streams, what provisions will be made to minimize any effects on sensors?
7. What procedures will be used to control vegetation and ground erosion in the vicinity of the transducer cable?
8. What means of lightning protection will be provided for this system?

Manmade

9. If manmade sources of nuisance alarms (e.g., pipes, sewers, overhead/underground power lines) will be present near the sensor, or the sensor

line will be installed under any fence sections, what provisions will be made to minimize nuisance alarms?

10. If there are roads, heavily traveled highways, or active railroads within a mile of the perimeter, what provisions will be made to minimize nuisance alarms caused by activities from these sources?
11. If the sensor line will require installation in or under concrete or asphalt, has a sensor type been selected or installed so that it can be expected to work properly in/under hard surfaces?

Performance Conditions

Installation

12. How will the sensor line bridge the portals?
13. What guidelines will be used to determine sensor installation procedures with respect to criteria such as soil removal (trenching), sensor burial depth, soil replacement around the sensor, sensor spacing (if applicable), and signal cable attachment and routing?

Operation

14. What criteria will be used to determine initial sensor sensitivity setting (where applicable)?
15. What procedures will be followed for an acceptable test of the sensor system relative to probability and false and nuisance alarms?
16. Once the sensors are installed and acceptable performance is demonstrated, how often will performance tests be repeated?

Maintenance

17. Will preventive maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?
18. What procedures will be followed if the sensor system fails?

Reliability

19. How much of the sensor circuitry will be tested by the self-test signal?
20. If the sensor has self-test capability, what will be the test frequency?
21. How often will the sensor system be subjected to a full operational test?
22. Will the sensor provide a fail-safe indication?

VulnerabilitiesAdversary Attributes

23. What will be the probability of detection expected for a stealthy intruder (a 75-pound or larger person crawling, walking very softly, rolling, or sliding)?
24. What will be the probability of detection expected for a fast-moving intruder (a 75-pound or larger person trotting or running)?
25. What steps will be taken to thwart a skilled intruder with equipment for vaulting or bridging the sensor line?
26. Should an unusually high or abnormal nuisance alarm rate develop, what steps would be taken to determine the cause for such a change, considering that the alarms might be deliberately caused as part of an intrusion attempt?

Related Questionnaires

27. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System
 - b. Emergency Generator Systems
 - c. Equipment Checks/Maintenance
 - d. Tamper-Indicating Circuitry

ANSWERSCONDITIONSSite Conditions

1. a. Yes, either there will be no ditches, gullies, or other abrupt disturbances, or they will be filled, leveled, or otherwise properly prepared.
b. No.
2. a. The planned sensor type will be tested at actual location.
b. The planned sensor type has been tested or utilized at a location with similar soil.
c. A soil/site survey will be conducted to determine (where applicable) characteristic signal frequencies, propagation velocities, and attenuation factors.
d. No testing or survey will be performed.
3. a. Sensors which are sensitive to such sources of nuisance alarms will not be used.
b. The sensor will be used in combination with other sensors which are not sensitive to such sources of nuisance alarms.
c. No provisions will be made.

Environmental ConditionsNatural

4. a. Either environmental conditions which could adversely affect the sensor are not expected to be a problem, or another sensor will be used when these conditions are present.
b. Additional guard patrols will be made.
c. No provisions will be made.
5. a. Either studies/surveys indicate such wildlife does not exist, or animal fences are to be constructed that will discourage both surface and burrowing animals.
b. No provisions will be made.

6.
 - a. The stream will be rerouted or removed from the near sensor.
 - b. The sensor will be relocated.
 - c. No provisions will be made.
7.
 - a. The area will be inspected and the conditions corrected at least twice a month.
 - b. The area will be inspected and the conditions corrected at least once a month.
 - c. The conditions will be corrected only if problems with the sensor arise due to these conditions.
8.
 - a.
 - (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings, and concrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and
 - (2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel, which in turn will be bonded to the structure (Faraday type) shield and a good ground, and
 - (3) At the entry panel, primary surge arresters, e.g., gas-filled spark gaps, will be connected between each cable conductor and ground, and
 - (4) If solid state electronic or other equipment sensitive to short time overvoltage is to be protected, then secondary surge protection, e.g., silicon junction avalanche devices or metal oxide varistors, will be connected at the equipment between each cable conductor and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
 - b. All of the above except (1), plus properly installed and grounded lightning rods.
 - c. Only (2) and (3) or, if sensitive equipment, only (2) and (4)
 - d. Only (2)

Manmade

9.
 - a. Either no manmade sources of nuisance alarms are expected to be a problem, or sensors which are sensitive to such sources of nuisance alarms will not be used.

- b. The sensor will be used in combination with other sensors which are not sensitive to such sources of nuisance alarms.
 - c. No provisions will be made.
- 10.
- a. Either the facility perimeter will not be within a mile of roads, heavily traveled highways, or active railroads, or sensors which are sensitive to the above conditions will not be used.
 - b. The sensor will be used in combination with other sensors which are not sensitive to these conditions.
 - c. No provisions will be made.
- 11.
- a. The sensor selected will not require installation of sensor lines in or under concrete or asphalt.
 - b. The sensor will be installed using guidelines provided in Volume I of the IDS Handbook.
 - c. No consideration was given to this problem in selecting or installing the sensor.

Performance Conditions

Installation

- 12.

 - a. It will continue straight through.
 - b. It will be routed through or over the portal.
 - c. It will terminate at each side of the portal.

- 13.

 - a. The manufacturer's recommendations and the guidelines in Volume I of the Intrusion Detection Systems (IDS) Handbook will be used.
 - b. Either the manufacturer's recommendations or the IDS Handbook will be used.
 - c. No formal guidelines will be used to determine sensor installation procedures.

Operation

- 14.

 - a. The criteria used to determine initial sensor sensitivity setting will be determined by onsite tests.
 - b. The criteria will be determined from the manufacturer's recommendations and the guidelines in Volume I of the IDS Handbook.

- c. Either the manufacturer's recommendations or the IDS Handbook will be used.
 - d. The criteria will be arbitrary.
15. a. The procedures will be those outlined in Volume I of the IDS Handbook and supported by procedures developed by other users.
- b. The procedures will be those outlined in the IDS Handbook or those developed by other users.
- c. Self-developed procedures will be used.
16. a. At least once per shift.
- b. At least daily.
- c. At least monthly.

Maintenance

17. a. Yes.
- b. No.
18. a. Standby replacement equipment will be immediately installed by onsite personnel.
- b. The equipment will be removed and replaced as soon as onsite repairs can be made.
- c. The equipment will be removed and replaced as soon as offsite repairs can be made.

Reliability

19. a. Testing will be complete, including the transducer.
- b. Testing will be complete except for the transducer.
- c. Only a part of the sensor circuitry will be tested.
- d. No self-test capability will exist.
20. a. At less than 30-second intervals.
- b. At 30-second to 60-second intervals.
- c. At 1-minute to 5-minute or greater intervals.
- d. No self-test capability will exist.
21. a. Every few months, or more often if repairs or changes have been made.
- b. At least once a year.

22. a. Yes
b. No.

Vulnerabilities

Adversary Attributes

23. a. P_D will be 0.90 or greater with the person moving as slowly as 0.005 metres per second.
b. P_D will be 0.90 or greater with the person moving as slowly as 0.25 metres per second.
c. $P_D = 0.90$ will occur only if intruder movement is a near-normal walk or faster.
24. a. P_D will be 0.90 or greater with the person moving up to 6.0 metres per second.
b. P_D will be 0.90 or greater with the person moving up to 3.0 metres per second.
c. $P_D = 0.90$ cannot be achieved if the person is moving faster than a normal walk.
25. a. The sensor will be used in combination with other sensors to ensure detection if an attempt is made to vault or bridge the sensor line.
b. Guards will be instructed to look for unusual activities that would include carrying ladders, boards, poles, etc.
c. Barriers along the perimeter will be depended upon to thwart an intruder penetration, particularly with equipment.
26. a. Guards will be immediately dispatched to the area of alarms to determine alarm cause; surveillance will continue until the cause of alarm is discovered.
b. Guard forces will be alerted for possible intrusions at the perimeter; the problem area will be nominally searched for intruders.
c. If no cause for alarms is discovered, or if alarms disappear, alarm will be ignored.

4.9 Capacitance Alarms

FUNCTION

The function of the capacitance alarms will be to detect intrusions near protected objects and/or attempts to touch these objects.

CONDITIONS

Site Conditions

Physical

1. In what type of room will the sensor be installed?
2. What will be used as a reference ground?
3. Will the floor be grounded to earth?
4. Will there be other large surfaces or objects nearby?
5. Will the protected object be located near a wall where there will be activity on the opposite side of the wall which could cause a nuisance alarm?

Environmental Conditions

Natural

6. Are there any natural environmental conditions that could cause a problem with a proximity sensor, i.e., high winds which flex nearby walls, frequent thunderstorms, seismic activity, or RF energy?
7. Will precautions be taken to ensure that living things (such as mice, guard dogs, or plants) are kept away from the protected objects by a distance at least equal to their longest dimension?

Manmade

8. How frequently is the protected object likely to be moved?
9. How frequently will other objects in the vicinity of the protected object be moved?
10. Will moisture be present on the floor under the protected object?

Performance ConditionsInstallation

11. Will testing be done to ensure that the capacitance load will be within the capabilities of the chosen sensor?
12. How often will the load capacitance be expected to change?
13. Where will the control box or processor be placed?
14. What wiring techniques will be used?
15. How will connections be made to the ground plane?

Operation

16. How often will the sensor be checked?
17. How will periodic checking be achieved?
18. What housekeeping rules will be applied?
19. How frequently will personnel be near the protected object?

Maintenance

20. Will preventive and routine maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?

Diversity and Redundancy

21. Will multiple proximity sensors be used?

Vulnerabilities

22. Will defeat methods be tried after installation?

Related Questionnaires

23. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Appropriate Emergency Power System
 - b. Equipment Checks/Maintenance
 - c. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite ConditionsPhysical

1.
 - a. Poured reinforced concrete.
 - b. Metal.
 - c. Both a. and b. above.
 - d. Cinder block.
 - e. Wood.

2.
 - a. A metal floor.
 - b. A reinforced concrete floor.
 - c. Other conductive floor.
 - d. A wood floor (poor ground).

3.
 - a. Yes.
 - b. No.

4.
 - a. Either there will be no nearby objects, a clear view will exist to the protected objects, or nearby objects will be nonconductive.
 - b. Nearby conductive objects and walls will be grounded.
 - c. Nearby conductive objects and walls will not be grounded and could cause problems.

5.
 - a. Either protected objects will not be near a wall or the wall will be conductive and grounded.
 - b. Protected objects will be near a nonconductive wall, but nothing will be permitted within 4 or more feet of the other side.
 - c. Protected objects will be near a nonconductive wall with grounded immovable objects on the opposite side.
 - d. Protected objects will be near a nonconductive wall with ungrounded immovable objects on the opposite side.
 - e. Protected objects will be near a nonconductive wall, with personnel movement on the opposite side which could cause frequent false alarms.

Environmental ConditionsNatural

- 6. a. No.
b. Yes.
- 7. a. Yes.
b. No.

Manmade

- 8. a. Only when installed or removed.
b. Approximately monthly.
c. More than once a week but not daily.
d. Daily or more often.
- 9. a. Yearly.
b. Approximately monthly.
c. More than once a week but not daily.
d. Daily or more frequently.
- 10. a. Never.
b. Yes, from sources such as seepage, leaky roof, or janitor mopping.

Performance ConditionsInstallation

- 11. a. Yes.
b. No.
- 12. a. Less than once a year.
b. From monthly to once a year.
c. More often than monthly.
- 13. a. On the protected object.
b. Adjacent to the protected object, but protected with it.
c. Remote from the site, but in the same building.
d. At a remote location such as a guard shack.
- 14. a. Wiring in conduits and supervised.
b. Wiring in conduits.
c. Open supervised wiring.
d. Open unsupervised wiring.
- 15. a. By establishing a ground plane under the protected object and isolating the object on insulated supports.

- b. By ground stakes.
- c. By the use of a powerline.

Operation

- 16.
 - a. Once per shift.
 - b. Daily.
 - c. At least once every seven days.
- 17.
 - a. Locally and remotely.
 - b. Locally by a roving guard.
 - c. By remote test only.
- 18.
 - a. The area around the protected object will be kept neat and orderly.
 - b. The area may be used for temporary storage of items.
 - c. None.
- 19.
 - a. Once a month or less frequently.
 - b. Once a week or less frequently.
 - c. Once a day.
 - d. Many times each day.

Maintenance

- 20.
 - a. Yes.
 - b. No.

Diversity and Redundancy

- 21.
 - a. Yes, if no interference problems are experienced.
 - b. No.

Vulnerabilities

- 22.
 - a. Yes.
 - b. No.

4.10 CCTV Monitoring/SurveillanceFUNCTION

The function of CCTV monitoring and surveillance will be to monitor activities and conditions in the PA, MAA, and VA for detection and assessment.

CONDITIONSPerformance ConditionsOperation

1. How many monitors will the operator be expected to observe?
2. Where will the monitor(s) be located in relation to operator controls?
3. How will monitors be selected and viewed?
4. Will the area in question be continuously monitored?
5. If the area in question is not continuously monitored, how often will the area be observed?
6. What will be the maximum duty period for an observer?
7. What will be the minimum recovery time for observers between monitoring duty periods?
8. Are the CCTV system controls and switches grouped by themselves?
9. Are the controls arranged in direct relationship to the units they control?

Diversity and Redundancy

10. What kind of surveillance backup will be used when a monitor is being repaired or replaced?
11. What kind of surveillance backup will be used when environmental conditions preclude visual surveillance via the monitors?

Maintenance

12. Will preventive maintenance be performed on a schedule supported by mean-time between-failure (MTBF) data?

Related Questionnaires

13. For evaluation completeness, please answer the following interrelated effectiveness tests:
- a. CCTV Systems
 - b. Emergency Battery System
 - c. Emergency Generator Systems
 - d. Equipment Checks/Maintenance

ANSWERSCONDITIONSPerformance ConditionsOperation

1.
 - a. One or two.
 - b. From three to five.
 - c. More than five.
2.
 - a. Directly above operator controls.
 - b. In the same area, so that control manipulation will not obstruct the visual path.
 - c. The operator will not be able to manipulate the controls while observing the monitor.
3.
 - a. By automatic interruptible timed sequence rotation.
 - b. Manually, in priority or timed sequence.
 - c. Automatically, by uninterruptible timed sequence rotation.
 - d. Manually, at the operator's discretion.
4.
 - a. Yes.
 - b. No.
5.
 - a. More often than once every 10 seconds.
 - b. Every 10 to 60 seconds.
 - c. Every 1 to 3 minutes.
 - d. Every 3 to 10 minutes.
 - e. More often than every 10 minutes.
6.
 - a. 1 hour.
 - b. From one to two hours.
 - c. More than 2 hours.
7.
 - a. Greater than 60 minutes.
 - b. 30 to 60 minutes.
 - c. Less than 30 minutes.
8.
 - a. Yes.
 - b. No.
9.
 - a. Yes.
 - b. No.

Diversity and Redundancy

10.
 - a. Spare monitors will enable immediate replacement.
 - b. Another similar monitor near the defective one.
 - c. Personnel dispatches to alarm site.

11.
 - a. Random patrols in surveillance areas at least every 5 minutes.
 - b. Random patrols in surveillance areas at least every 10 minutes.
 - c. Random patrols in surveillance areas at least every 30 minutes.
 - d. Random patrols in surveillance areas at least every 2 hours.
 - e. None.

Maintenance

12.
 - a. Yes.
 - b. No.

4.11 CCTV Systems

FUNCTION

The function of the CCTV will be to sense intrusions and other unauthorized activities and conditions in the PA, MAA, and VA for detection and assessment.

CONDITIONS

Site Conditions

Operation

1. If CCTV coverage is incomplete due to, for example, buildings or hilly terrain causing blind spots, what provisions will be made to achieve complete coverage?
2. Will a large number of cameras be necessary to cover all the required area?
3. What system resolution will be required?

Environmental Conditions

Natural

4. If adverse environmental conditions, e.g., wind, fog, temperature extremes, rain, snow, lightening, are expected to degrade system reliability, what provisions will be made to protect exterior cameras and signal processing equipment against the environment?
5. What means of lightning protection will be provided for the CCTV system?

Manmade

6. If nearby sources of EMI are present, what provisions will be taken to prevent interference?

Performance Conditions

Installation

7. What will be done to the site in the way of preparation to increase target visibility?

Operation

8. If a switching system is employed, will it provide for vertical roll-free switching?
9. If the system included video motion detection (VMD), has consideration been given to the viewing field of the VMD to eliminate high "nuisance alarm" situations?

Maintenance

10. Will preventive maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?

Diversity and Redundancy

11. What provision will be made for backup capability in the event of system failure?

Vulnerabilities

12. Will all critical components, e.g., cameras, lights, controls, junction boxes, cabling, be located within a secure area?

Related Questionnaires

13. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Controlled Security Lighting
 - b. Emergency Battery System
 - c. Emergency Generator Systems
 - d. Equipment Checks/Maintenance
 - e. Tamper-Indicating Circuitry

ANSWERSCONDITIONSSite ConditionsOperation

1.
 - a. No blind spots will exist.
 - b. Additional cameras will be added to eliminate blind spots.
 - c. Blind spots will be acceptable because provision has been made for coverage by other means (response force, human observation, etc.).
2.
 - a. Yes, and some sort of automated switching system will present the data to the operator in a usable manner.
 - b. No, a small number of cameras are assigned to a small number of dedicated monitors which the operator should handle successfully.
 - c. Yes, but each camera will be connected to a dedicated monitor and might overwhelm the operator with visual information.
3.
 - a. Sufficient to distinguish a man's face anywhere in the designed zone of coverage.
 - b. Sufficient to distinguish a human figure anywhere in the designed zone of coverage.
 - c. Sufficient to differentiate between man and small animals anywhere in the designed zone of coverage.

Environmental ConditionsNatural

4.
 - a. All equipment will be enclosed in environmental housings.
 - b. The cameras will be enclosed in adequate environmental housings, and the signal processing system will be protected.
 - c. The cameras will be protected but not the signal processing system.
 - d. The signal processing system is adequately protected, but the cameras are not.
 - e. Neither the cameras nor the signal processing system will be protected.

5. a. (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings, and concrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and
- (2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel which, in turn, will be bonded to the structure (Faraday type) shield and a good ground, and
- (3) At the entry panel, primary surge arresters, e.g., gas-filled spark gaps, will be connected between each cable conductor and ground, and
- (4) If solid state electronic or other equipment sensitive to short time overvoltage is to be protected, then secondary surge protection, e.g., silicon junction avalanche devices or metal oxide varistors, will be connected at the equipment between each cable conductor and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
- b. All of the above except (1), plus properly installed and grounded lightning rods.
- c. Only (2) and (3) of the above or, if sensitive equipment, only (2) and (4).
- d. Only (2) of the above.

Manmade

6. Both the cameras and transmission lines will be isolated and shielded.
- b. Transmission lines will be shielded, but cameras might be susceptible to EMI.
- c. Isolation will be provided for cameras and unshielded lines.
- d. Isolation or shielding of the camera or transmission lines will be provided.

Performance Conditions

Installation

7. a. Grading and clearing of area to increase uniformity of background and improved security lighting.

- b. Grading and clearing of area to increase uniformity of background or improved security lighting.
- c. Nothing.

Operation

- 8.
 - a. Yes, a master sync system will be used.
 - b. No, each camera will generate its own sync signal.
- 9.
 - a. Yes, a well-controlled interior scene will be monitored.
 - b. Yes, a controlled exterior scene will be monitored.
 - c. Yes, but some trees and shrubs that can't be eliminated and might cause "nuisance alarms" in high winds will be monitored.
 - d. No.

Maintenance

- 10.
 - a. Yes.
 - b. No.

Diversity and Redundancy

- 11.
 - a. Additional security alarm systems will provide complete redundancy.
 - b. Manned observation towers will be present.
 - c. Roving patrols will cover all areas frequently.
 - d. None.

Vulnerabilities

- 12.
 - a. All critical components will be located within the secure area, and tamper-indicating devices will be employed to detect penetration attempts.
 - b. All critical components will be located within the secure area.
 - c. Some critical components may be outside the secure area; however, in these instances tamper-indicating devices are to be used.

4.12 Central and Secondary Alarm Stations

FUNCTION

The function of the central and secondary alarm stations (CAS and SAS) will be to coordinate alarm assessment and deployment of response.

CONDITIONS

Site Conditions

Physical

1. Where will the CAS be located?
2. Where will the SAS be located?

Operation

3. Will the CAS contain any operational activities that would interfere with the execution of the alarm response function?
4. Will the SAS operator be dedicated to the security operation, or will he perform other operational control functions?
5. Will the CAS and SAS doors be locked at all times, except for authorized entry?
6. How will authorized entry be determined for the CAS?
7. How will authorized entry be determined for the SAS?
8. Will all alarms annunciate in both alarm stations?
9. How will the status of all alarms be indicated in the CAS?
10. How will the status of alarms be indicated in the SAS?
11. Will there be separate computer systems for the CAS and SAS?
12. Will both the CAS and SAS be provided with duress alarms?
13. What sort of communications will exist between the CAS and SAS?

Environmental ConditionsNatural

14. If any radio mast or microwave antenna support towers will be located on or near a CAS or SAS, will they be bonded to the main conductor of the lightning protection system with a main-size conductor and UL-approved fittings?
15. What means of lightning protection will be provided for the CAS and the SAS?

Performance ConditionsInstallations

16. Will any windows in the CAS or SAS provide one-way viewing?
17. How well will the CAS be able to withstand a chemical attack?
18. How well will the SAS be able to withstand a chemical attack?
19. Will either alarm station be accessible from utility ports such as manholes, tunnels, air-conditioning ducts, etc., and, if so, how will this access be eliminated?
20. Will there be separate cable runs from alarm detector units to each alarm station annunciator system?
21. If separate cable runs are not used, where will the signal cable split to the CAS and the SAS?
22. To what extent are the CAS and SAS redundant?
23. Will one station be able to switch the status of an alarm (secure to access, alarm to access) without altering the other station?
24. Will each alarm station have both telephone and radio or microwave two-way voice communication with local law enforcement authorities?
25. In the event of an ac power outage, to what functions will the alarm station emergency power system supply power?
26. Will annunciator errors occur as a result of transfer from normal to emergency power?
27. How will alarms or "change of status" be recorded?
28. For how long will alarm and "change of status" records be kept?

Maintenance

29. Will the frequency of preventative maintenance be scheduled according to mean-time-between-failure of the alarm station equipment?

Related Questionnaires

30. For evaluation completeness, please answer the following interrelated effectiveness tests:
- a. Emergency Battery System
 - b. Emergency Generator Systems
 - c. Equipment Checks/Maintenance
 - d. Tamper-Indicating Circuitry

ANSWERSCONDITIONSSite ConditionsPhysical

1. a. Within a protected area (PA) and within a building such that the interior of the CAS is not visible from the perimeter of the PA. No wall common with building outside wall.
- b. Within a PA and within a building, such that the interior of the CAS is not visible from the perimeter of the PA. Contains wall common with building outside wall, made of bullet-resisting material.
- c. Within a PA, within a building.
2. a. Within a specially designed bullet-resistant building, inside the PA.
- b. Within the PA, within a building.
- c. Within a specially designed bullet-resistant building, outside the PA.
- d. Within a building outside the PA.

Operation

3. a. No, activities will be directed only toward alarm response.
- b. There will be a fire control station located within the CAS, but this will require a minimum of activity.
- c. Because of certain activities, priorities will have to be set so that there is no interference with alarm functions.
4. a. The SAS operator will be dedicated to security operations.
- b. The SAS operator will perform other functions, but primary priorities will be security operations.
- c. The SAS operator will perform various functions.
5. a. Yes.
- b. No.
6. a. By remotely controlled positive personnel identification.
- b. By coded credentials.
- c. By photo identification.

7.
 - a. By remotely controlled positive personnel identification.
 - b. By coded credentials.
 - c. By photo identification.
8.
 - a. Yes, all alarms will annunciate in both alarm stations.
 - b. Only alarms pursuant to 10 CFR Part 73.46(e) will annunciate in both stations.
9.
 - a. Continuously visibly displayed for each alarm zone.
 - b. Computer printout.
10.
 - a. Continuously visibly displayed for each alarm zone.
 - b. Computer printout.
11.
 - a. Yes.
 - b. No.
12.
 - a. Yes, the duress alarms will annunciate in the alarm station not under duress and concurrently with LLEA.
 - b. Yes.
13.
 - a. CCTV monitoring, radio, telephone, and duress.
 - b. Radio, telephone, and duress.
 - c. Telephone and duress.

Environmental Conditions

Natural

14.
 - a. Yes, or no support towers will be located on or near a CAS or SAS.
 - b. No.
15.
 - a.
 - (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings, and concrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and
 - (2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel which, in turn, will be bonded to the structure (Faraday type) shield and a good ground, and
 - (3) At the entry panel, primary surge arresters, e.g., gas-filled spark gaps, will be connected between each cable conductor and ground, and

- (4) If solid state electronic or other equipment sensitive to short time overvoltage is to be protected, then secondary surge protection, e.g., silicon junction avalanche devices or metal oxide varistors, will be connected at the equipment between each cable conductor and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
- b. All of the above except (1), plus properly installed and grounded lightning rods.
 - c. Only (2) and (3) of the above, or, if sensitive equipment, only (2) and (4).
 - d. Only (2) of the above.

Performance Conditions

Installation

- 16.
 - a. There will be no windows in either the CAS or the SAS.
 - b. Windows in the SAS will be one-way viewing (inside-to-outside).
 - c. Windows in the CAS will be one-way viewing (inside-to-outside).
 - d. Windows in the SAS will not be one-way viewing.
 - e. Windows in the CAS will not be one-way viewing.
- 17.
 - a. Very well; equipment and procedures to withstand such an attack will be readily available. Guards will be trained in handling such an attack.
 - b. This type of attack will be highly unlikely, due to plant layout and security. No preparation for a chemical attack will be made.
 - c. No preparation for a chemical attack will be made.
- 18.
 - a. Very well; equipment and procedures to withstand such an attack will be readily available. Guards will be trained in handling such an attack.
 - b. This type of attack will be highly unlikely, due to plant layout and security. No preparation for a chemical attack will be made.
 - c. No preparation for a chemical attack will be made.
- 19.
 - a. No such port will exist at the CAS or the SAS.
 - b. Port(s) will exist about the SAS, but will be covered with grating or other material to prohibit unauthorized use.
 - c. Port(s) will exist about the CAS, but will be covered with grating or other material to prohibit unauthorized use.

- d. Such ports will exist but are not expected to cause a breach in security.
20. a. Yes.
b. No.
21. a. Either separate cable runs will be used or split will be within the PA.
b. Outside the PA.
22. a. Completely redundant operating stations, with SAS stand-alone capability.
b. Semiredundant stations, SAS dependent upon several CAS functions.
c. Majority of SAS functions directly dependent on CAS functions.
23. a. No.
b. Yes.
24. a. Yes, both CAS/SAS directly.
b. Both CAS/SAS indirectly.
25. a. To all alarm systems, communication systems, lightning systems, and CCTV systems.
b. To all alarm systems required by 10 CFR Part 73.46(e) and communication systems.
26. a. No.
b. No, false alarms will be generated, but some down time may occur.
27. a. Automatically in both CAS and SAS.
b. Automatically in CAS, manually in SAS.
c. Manually in CAS and SAS.
d. Manually in CAS only.
28. a. 5 years.
b. 2-5 years.
c. Less than 2 years.
29. a. Yes.
b. No.

4.13 Close-out Inspection by a Third Party

FUNCTION

The function of the close-out inspection by a third party will be to detect any unauthorized conditions following equipment maintenance or repair in the PA, MAA, and/or VA.

CONDITIONS

Performance Conditions

1. In what areas of the facility will close-out inspections be required?
2. Under what conditions will close-out inspections be required?
3. Who will perform the close-out inspections?
4. How will personnel be assigned the task of performing a close-out inspection?
5. How soon after completion of work will the inspections be performed?
6. How will inspection results be reported?
7. How will inspection requirements and procedures be specified?
8. What level of detail will be required for performance of a close-out inspection?

ANSWERSCONDITIONSPerformance Conditions

1.
 - a. In all security areas within the facility.
 - b. In MAAs and VAs.
 - c. In VAs only.
 - d. In MAAs only.
 - e. Close-out inspections will be performed only on specific equipment.
2.
 - a. A close-out inspection will be required after any equipment maintenance or repair in areas designated as requiring close-out inspections.
 - b. A close-out inspection will be required after maintenance or repair on equipment designated as requiring close-out inspections.
 - c. Close-out inspections will be performed in a random manner.
3.
 - a. A technically competent individual who has not been involved in the repair or maintenance of the equipment.
 - b. An individual with sufficient technical background to detect gross equipment tampering, who has not been involved in the repair or maintenance of the equipment.
 - c. An individual with sufficient technical background to detect gross equipment tampering.
4.
 - a. Personnel assignments will be rotated on a random basis.
 - b. Personnel assignments will be scheduled not more than one week in advance and will not be posted.
 - c. Personnel assignments will be scheduled more than one week in advance and will be posted.
5. Close-out inspections will be performed:
 - a. Immediately following task completion. The results will be reported before personnel assigned to work in the area are permitted to work in another VA or MAA, or on another vital system within the same VA.
 - b. Immediately following the task completion. Personnel assigned to work in the area will be permitted to work in another VA or MAA or another vital system in the same VA before the inspection is completed.
 - c. At some time following task completion and during the current workshift.

6.
 - a. Inspection forms will be used and filed with the security office. Strict inventory of the forms will be kept to prevent their unauthorized use.
 - b. Inspection forms will be used and filed with the security office.
 - c. Inspection results will be verbally transmitted to the security office.
7. Inspection requirements and procedures will:
 - a. Be specified in a check list which the individual will be required to use as a guide during the inspection. The checklist will have limited distribution.
 - b. Be specified in a procedures handbook which will be issued to the individual when he is employed as an inspector.
 - c. Be specified in a procedures handbook which will be available to the individual upon request.
 - d. Not be formally specified.
8. A close-out inspection will require:
 - a. Visual check for sabotage devices or any evidence of misuse or tampering with the vital system, and an operability check of the vital system and other systems in the immediate area.
 - b. A visual check for sabotage devices or any evidence of misuse or tampering either with the vital system which was serviced or with any other vital system in the immediate vicinity.
 - c. A visual check for sabotage devices or any evidence of tampering with the vital system which was serviced.

4.14 Coded Credential Systems (Badge Readers)

- Active Electronic
- Electronic Magnetic Coded
- Electric Circuit
- Magnetic Coded
- Magnetic-Strip Coded
- Metallic-Strip Coded
- Optical Coded
- Passive Electric

FUNCTION

The function of the coded credential systems will be to verify authorized entry into the PA, MAA, and/or VA.

CONDITIONS

Performance Conditions

1. Will the coded credentials be retained at the site when personnel leave the facility?
2. Will personnel identification be used with the credential system?
3. Will the number of unique authorization codes greatly exceed the number of personnel using the system?
4. Will the coded credential system have antipassback features which will prevent a credential being used in two places at the same time or being reentered in an area that has not first been exited?
5. Will the coded credential system have instant access change capabilities for cases in which access authority changes or credentials are lost or stolen?
6. Will the coded credential system have an occupancy list capability which will enable safety and security personnel to verify that an area is clear of all personnel?
7. Will the area access authorization be encoded on the credential?
8. In the event of equipment failure, what substitute procedure will be used to perform this function?

Vulnerabilities

9. Will it be difficult to decode and counterfeit this type of credential?

Related Questionnaires

10. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Equipment Checks/Maintenance
 - b. Tamper-Indicating Circuitry

ANSWERSCONDITIONSPerformance ConditionsOperation

1.
 - a. Yes, the credentials will be issued after personnel identification when personnel enter the facility, and retained when personnel leave each day.
 - b. No, personnel will be allowed to carry their credentials at all times.
2.
 - a. Yes, personnel identification will take place at all controlled access points; the credential alone will be used only for access authorization where identification will not be required.
 - b. No.
3.
 - a. Yes, the probability of gaining access by randomly encoding a credential is low.
 - b. No; however, personnel identification will be used throughout the system.
 - c. No, the probability of gaining access through knowledge of the code format and random encoding of a credential is high.
4.
 - a. Yes, personnel will be required to use the credential system when entering and exiting all areas.
 - b. No.
5.
 - a. Yes.
 - b. No.
6.
 - a. Yes.
 - b. Yes, but only for certain areas.
 - c. No.
7.
 - a. No, the authorization will be stored at a central control.
 - b. Yes.
8.
 - a. Redundant equipment is immediately available.
 - b. Specific procedures for manual identity verification and authorization verification have been developed and will be employed.
 - c. If system failure occurs, substitute measures will be developed as needed.

Vulnerabilities

9. a. Yes, counterfeiting will require highly specialized electronic equipment and techniques.
- b. Yes, counterfeiting will require some technical background and access to special components.
- c. No, anyone with a knowledge of the basic concepts will be able to reproduce the credential.

4.15 Commercial Telephone System

FUNCTION

The function of the commercial telephone system is to augment facility communication capabilities.

CONDITIONS

Environmental Conditions

1. If environmental conditions, e.g., electrical storms or ice storms, which could adversely affect the telephone are anticipated, what provisions will be made to ensure communication under these conditions?

Performance Conditions

Installation

2. What organization(s) will install the telephone system?

Maintenance

3. How often will preventive maintenance be performed on the telephone?

Reliability

4. What provisions will be made in case of telephone failure?

Vulnerabilities

Component Protection

5. Will the telephone system be alarmed to indicate attempts to compromise the equipment?

ANSWERSCONDITIONSEnvironmental Conditions

1. a. Environmental conditions which could adversely affect the telephone lines are not anticipated, the telephone line will be buried for protection from adverse environmental conditions and/or an alternate means of communication will be available during these conditions.
- b. No provisions will be made.

Performance ConditionsInstallation

2. a. It will be installed by telephone company personnel in conjunction with licensee maintenance personnel.
- b. It will be installed by telephone company personnel.

Maintenance

3. a. Maintenance will be performed on a routine preventive basis at time intervals less than the mean-time-between-failure (MTBF) rate.
- b. Maintenance will be performed any time minor complaints are reported.
- c. Maintenance will be performed only when the telephone fails.

Reliability

4. a. The telephone line will be serviced within 1 to 2 hours during which time an alternate means of communication will be available.
- b. The telephone line will be serviced within 24 hours during which time an alternate means of communication will be available.
- c. The telephone line will be serviced whenever the telephone company can provide repair service, and on alternate means of communication will be available.

VulnerabilitiesComponent Protection

5. a. Yes.
- b. No.

4.16 Contingency Plans and Procedures

FUNCTION

The function of the contingency plan and procedures will be to provide guidance to facility personnel and to identify procedures for handling threats, attempted theft, sabotage, or other non-routine events.

CONDITIONS

1. Will the contingency plan provided by the licensee meet the requirements of 10 CFR 73, Appendix C?
2. What procedure will be used to develop the purpose and scope of the plan in order to address the foreseeable contingencies at the site?
3. Will the command and control structure delineated in the plan be consistent with the requirements for proper plan execution?
4. Will the contingency plan, particularly the responsibility matrix, be reviewed with security personnel?

ANSWERSCONDITIONS

1. a. Yes.
b. No, but documentation supporting exception to the requirements of 40 CFR 73, Appendix C, will be provided.
2. a. A formal examination of operations to determine vulnerabilities, e.g., fault-tree analysis, will be performed.
b. An informal examination of operations to determine vulnerabilities will be performed.
c. A cursory examination of operations to determine vulnerabilities will be made.
3. a. Yes.
b. No.
4. The contingency plan, particularly the responsibility matrix will:
 - a. Be reviewed with security personnel as part of training and retraining and whenever any significant changes are made.
 - b. Be reviewed with the security personnel as part of initial training.
 - c. Be reviewed only with key security personnel, e.g., the central alarm station operator.

4.17 Controlled Security Lighting

FUNCTION

The function of the security lighting will be to provide illumination for monitoring, surveillance, and alarm assessment.

CONDITIONS

Environmental Conditions

1. What means of lightning protection will be provided for the lighting systems?
2. What criteria will be used in the design of the lighting system for the area of concern?
3. Will the exterior lighting be energized automatically if the ambient illumination falls below the level adequate for observation?

Performance Conditions

Maintenance

4. Will preventative maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?
5. How often will illumination levels be checked?

Reliability

6. What means of lighting will be available should the normal exterior or interior lighting system fail?
7. In the event of normal power failure (accidental or intentional), how much time will be required to restore full lighting output?

Vulnerabilities

8. Will all components of the lighting system, e.g., lamps, junction boxes, cables, controls be located within the protected area?

Related Questionnaires

9. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System
 - b. Equipment Checks/Maintenance
 - c. Tamper-Indicating Circuitry

ANSWERSCONDITIONSEnvironmental Conditions

1. a. (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings, and oncrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and
 - (2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel, which in turn will be bonded to the structure (Faraday type) shield and a good ground, and
 - (3) At the entry panel, primary surge arresters, e.g., gas-filled spark gaps, will be connected between each cable conductor and ground, and
 - (4) If solid state electronic or other equipment sensitive to short time overvoltage is to be protected, then secondary surge protection, e.g., silicon junction avalanche devices or metal oxide varistors, will be connected at the equipment between each cable conductor and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
- b. All of the above except (1), plus properly installed and grounded lightning rods.
- c. Only (2) and (3) or, if sensitive equipment, only (2) and (4).
- d. Only (2).
2. a. If observation is primarily by CCTV,
 - (1) The minimum illumination at any point within the area of concern will be obtained from the following considerations: the sensitivity and spectral response of the video image tube, the aperture and light transmission of the lens, and the scene reflectivity, and
 - (2) The maximum illumination at any point will be set to minimize picture washout (max/min illumination ratio <10), and
 - (3) Light sources will be positioned so as to minimize glare in the field of view, and
 - (4) The average illumination over the area will be set to provide well-defined images at the monitor, taking into account automatic camera and circuit controls.

If observation is by direct visual only,

- (1) The minimum illumination at any point within the area of concern will be set by the following considerations: observer visual characteristics (i.e., visual contrast threshold and light level adaptation) and degree of resolution required; and
 - (2) The maximum illumination at any point will be set to reduce the number of natural fixation points (phototropic effects) within the search field and to minimize transient retinal adaptation level; and
 - (3) Light sources will be positioned so as to prevent glare in the field of view; and
 - (4) Spot lighting will be considered for supplemental illumination in suspected areas.
- b. (1), (2), and (3) of the appropriate answer group in answer a.
 - c. (1) and (2) of the appropriate answer group in answer a.
 - d. The minimum acceptable lighting level will be met as in 10 CFR 73.46-C(4) or industrial guidelines as published by the Illuminating Engineering Society (IES).
3.
 - a. Yes.
 - b. No, but it will be energized manually when requested by the observer.
 - c. No, but it will be energized shortly before sundown.

Performance Conditions

Maintenance

4.
 - a. Yes.
 - b. No.
5.
 - a. At least monthly.
 - b. Monthly to semiannually.
 - c. Semiannually to annually.
 - d. Greater than annually.

Reliability

6.
 - a. Auxiliary incandescent lighting will be available for immediate emergency use.
 - b. Night visual aids will be issued to patrols and/or guards on post.

- c. Portable lighting and flashlights will be available within a few minutes.
- 7.
- a. Less than 5 seconds.
 - b. From 5 seconds to 1 minute.
 - c. 1 minute to 5 minutes.
 - d. More than 5 minutes.

Vulnerabilities

- 8.
- a. Yes.
 - b. No.

4.18 Data Link Via Radio Frequency

FUNCTION

The function of the RF data link will be to transmit data, e.g., alarm sensor output, remote video data, etc., to a control unit or indicator via radio-frequency.

CONDITIONS

Site Conditions

1. Will any obstructions exist within the data link path which might cause interference?

Environmental Conditions

2. What means of lightning protection will be provided?

For RF cable transmission,

3. Will all exterior connections be sealed from moisture?
4. Will messenger wire be used to support aerial cable runs?

Performance Conditions

Operation

5. Will facility communication equipment interfere with the data link operation?
6. On how many frequencies will the data link be able to transmit?
7. What will be the expected time between the initiation of a sensor signal and the display activation?

If the data link will be used to transmit data from a remote video camera to local video monitors,

8. Will the modulator/demodulator bandwidth be compatible with the required video picture resolution?

Maintenance

9. Will preventive maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data if it is available?

Reliability

10. In the event that normal power should fail (accidental or intentional), how much time will be required to restore data link operation?
11. What portion of the system will be disabled if a single data link is disabled?

Related Questionnaires

12. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Appropriate Emergency Power System
 - b. Equipment Checks/Maintenance
 - c. Tamper-Indicating Circuitry
 - d. Video Hardwire.

ANSWERSCONDITIONSSite Conditions

1. a. No.
- b. Yes.

Environmental Conditions

2. a. (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings, and concrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and
- (2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel, which in turn will be bonded to the structure (Faraday type) shield and a good ground, and
- (3) At the entry panel, primary surge arresters, e.g., gas-filled spark gaps, will be connected between each cable conductor and ground, and
- (4) If solid state electronic or other equipment sensitive to short-time overvoltage is to be protected, then secondary surge protection, e.g., silicon junction avalanche devices or metal oxide varistors, will be connected at the equipment between each cable conductor and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
- b. All of the above except (1), plus properly installed and grounded lightning rods.
- c. Only (2) and (3) or, if sensitive equipment, only (2) and (4).
- d. Only (2).
3. a. Yes, or RF cable will not be used.
- b. No.
4. a. Either the cable will be installed in underground conduit or RF cable will not be used.
- b. Yes.
- c. No.

Performance ConditionsOperation

5.
 - a. No.
 - b. Yes.
6.
 - a. On a number equal to its inputs, e.g., one frequency per sensor.
 - b. On one frequency per group of inputs.
 - c. On one frequency.
7.
 - a. Less than 1 second.
 - b. From 1 to 2 seconds.
 - c. From 2 to 5 seconds.
 - d. From 5 to 10 seconds.
 - e. From 10 seconds to 1 minute.
 - f. More than 1 minute.
8.
 - a. Yes, or video data will not be transmitted.
 - b. No.

Maintenance

9.
 - a. Yes, or MTBF data will not be available.
 - b. No.

Reliability

10.
 - a. Less than 5 seconds.
 - b. From 5 seconds to 1 minute.
 - c. From 1 to 5 minutes.
 - d. Longer than 5 minutes.
11.
 - a. None.
 - b. Less than 10 percent.
 - c. From 10 to 25 percent.
 - d. From 25 to 50 percent.
 - e. More than 50 percent.

4.19 Direct-Line Telephone/Intercom

FUNCTION

The function of the direct line telephone/intercom will be to provide a means of communication between the CAS, SAS and guard stations and between the CAS and local law enforcement authorities.

CONDITIONS

Environmental Conditions

1. If environmental conditions which could adversely affect the telephone are anticipated, what provisions will be made to ensure communication under these conditions?
2. What means of lightning protection will be provided for the equipment?

Performance Conditions

Installation

3. What means of installation will be used for the cables connecting the equipment?

Maintenance

4. How often will preventive maintenance be performed on the equipment?

Reliability

5. How often will the equipment be performance tested?
6. Will an alternate communication system be available?

Vulnerabilities

Component Protection

7. What provisions will be made to reduce the vulnerability of hardwire links? If so, what type?

Related Questionnaires

8. For evaluation completeness, please answer the following interrelated effectiveness tests:
- a. Emergency Battery System
 - d. Equipment Checks/Maintenance
 - e. Tamper-Indicating Circuitry

ANSWERSCONDITIONSEnvironmental Conditions

1. a. Environmental conditions which could adversely affect the telephone lines are not anticipated; the equipment will be protected from adverse environmental conditions, and/or an alternate means of communication will be available during these conditions.
- b. No provisions will be made.
2. a. (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings, and concrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and
 - (2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel, which in turn will be bonded to the structure (Faraday type) shield and a good ground, and
 - (3) At the entry panel, primary surge arresters, e.g., gas-filled spark gaps, will be connected between each cable conductor and ground, and
 - (4) If solid state electronic or other equipment sensitive to short time overvoltage is to be protected, then secondary surge protection, e.g., silicon junction avalanche devices or metal oxide varistors, will be connected at the equipment between each cable connector and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
- b. All of the above except (1), plus properly installed and grounded lightning rods.
- c. Only (2) and (3) or, if sensitive equipment, only (2) and (4).
- d. Only (2).

Performance ConditionsInstallation

3. a. Buried conduit.
- b. Exposed conduit.
- c. Open.

Maintenance

4. a. Maintenance will be performed on a routine basis at time intervals less than the mean-time-between-failure (MTBF) rate.
- b. Maintenance will be performed any time minor problems exist.
- c. Maintenance will be performed only when the equipment fails.

Reliability

5. a. Once every shift.
 - b. Daily.
 - c. Weekly.
 - d. Less often than weekly.
6. a. Yes, radio link or microwave will be available.
 - b. Yes, some alternate means of communication will be available.

VulnerabilitiesComponent Protection

7. a. Signals will be transmitted redundantly over different cables protected by metallic conduits via different routes.
- b. Signals will be transmitted redundantly over one cable protected by metallic conduit and through one other circuit.
- c. The cable will be buried in metallic conduit.
- d. No provisions will be made.

4.20 Direct Monitoring/Surveillance

FUNCTION

The function of this procedure will be to monitor activities and conditions in the PA (including isolation zones), MAA, and VA for detection and assessment.

CONDITIONS

Performance Conditions

1. Will all procedures and actions requiring surveillance be documented?
2. Will observers be sufficiently trained in the operations under surveillance to recognize unauthorized actions or actions inconsistent with established procedures?
3. Will the area for which each observer is responsible be sized to that unauthorized acts of concern can be recognized readily?
4. Will the area under surveillance be kept clear of objects and/or items which could block the observation of activities?
5. Will all employees be informed of the existence and the purpose of the monitoring/surveillance procedures?
6. Will the observer have any other duties that could distract him from his surveillance duties?
7. If monitoring will be intermittent, will observers be concealed to maintain a level of deterrence?
8. What will be the maximum duty period for an observer?
9. Will observers be randomly assigned to areas?
10. What will be the minimum recovery time for observers between monitoring duty periods?
11. Will there be provisions for random testing of observers and reporting procedures, using staged unauthorized acts?

Related Questionnaires

12. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Controlled Security Lighting.

ANSWERSCONDITIONSPerformance Conditions

1. a. Yes.
b. No.
2. a. Yes, they will be trained using written procedures.
b. Yes, they will be trained using verbal instructions.
c. No, no formal training will be given.
3. a. Yes.
b. This factor will not be a consideration.
4. a. Yes.
b. No, but supplementary coverage (CCTV, mirrors, etc.) will be provided where obstructions to direct viewing exist.
c. No.
5. a. Yes.
b. No.
6. a. No.
b. Yes, but these duties will not distract him from surveillance duties.
c. Yes.
7. a. Yes, or monitoring will not be intermittent.
b. No.
8. a. 1 hour or less.
b. 1-2 hours.
c. More than 2 hours.
9. a. Yes.
b. No.
10. a. More than 60 minutes.
b. 30 to 60 minutes.
c. Less than 30 minutes.
11. a. Yes.
b. No.

4.21 Doors and Associated Hardware

FUNCTION

The function of the door will be to delay adversary access to Controlled Access Areas in order to aid detection, assessment, and response. (The effectiveness tests for vault doors and emergency doors are considered in separate sections.)

CONDITIONS

Site Conditions

1. Will the door be used for vehicles or pedestrians?
2. Where will the door be located?
3. What is the size of the door?
4. Will the door be visible from outside the Protected Area?

Performance Conditions

5. What type of personnel door will be installed?
6. What type of vehicle door will be installed?
7. What is the material of construction?
8. What is the thickness of the door?
9.
 - a. Is the door made of composite construction or hollow-core design?
 - b. If composite construction, what is the nature of the core?
10.
 - a. Are portals built into the door?
 - b. If so, what type portals are they?
11. Will the door frame be anchored to the wall so as to equal the penetration resistance of the door?
12.
 - a. Does the door have a lock?
 - b. What type of lock is it?
13. How will the locking mechanism penetration time compare to the penetration resistance of the door?
14. What hinge design is used on the door?
15. Will hinges and other hardware be on the inside or outside of the door?
16. Does this door have a panic bar?

17. What will be the probable penetration time(s) for the door? (See Barrier Technology Handbook and other references.)
18. Will the penetration time(s) for the door be equivalent to that for the adjacent barriers?

Vulnerabilities

Adversary Attributes

19. What classes of tools will correspond to the above penetration times for the door?
20. What number of persons carrying out the penetrations are associated with the above penetration time(s)?

Related Questionnaires

21. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Locks (Keyed/Keyless).

ANSWERSCONDITIONSSite Conditions

1.
 - a. Pedestrians.
 - b. Vehicles.
 - c. Both of the above.
2.
 - a. Vault.
 - b. In an inside wall.
 - c. In an outside wall.
3. (specify dimensions).
4.
 - a. No.
 - b. Yes.

Performance Conditions

5.
 - a. A high-security custom-designed door.
 - b. A high-security standard-design door.
 - c. A solid-core metal door.
 - d. A hollow-core metal door.
 - e. A glass door.
 - f. A wood door.
6.
 - a. A specially designed blast-resistant door.
 - b. A sliding-panel steel door (hollow).
 - c. A steel-plate hinged door.
 - d. A corrugated-steel roll-up door.
7.
 - a. $> 1/2''$ solid steel plate.
 - b. $< 1/2''$ but $> 1/4''$ solid steel plate.
 - c. $< 1/4''$ steel plate.
 - d. 16 gage steel surface plates (0.060")
 - e. 18 gage steel surface plates (0.048")
8.
 - a. $> 3/4''$ thickness
 - b. $< 3/4''$ thickness
9.
 - a.
 - (1) Composite construction.
 - (2) Hollow-core.
 - b.
 - (1) Noncombustible slab.
 - (2) Metal channels.
 - (3) Redwood.
 - (4) Polyurethane foam.

10. a. (1) No.
(2) Yes.
10. b. (1) Grill.
(2) Mesh.
(3) Louvers.
(4) Glass.
11. a. Yes.
b. No.
12. a. (1) Yes.
(2) No.
12. b. (1) 6-pin tumbler/cylinder lock.
(2) 5-pin tumbler/cylinder lock.
(3) Padlock.
(4) Other (Specify).
13. a. The two will be equal.
b. The lock penetration time will be greater than the door delay time.
c. The door delay time will be greater than the lock penetration time.
14. a. Mortised hinges.
b. Non-removable pins.
15. a. Inside.
b. Outside.
16. a. Yes.
b. No.
17. (Specify)
18. a. Yes.
b. No.

Vulnerabilities

Adversary Attributes

19. a. Vehicle as ram.
b. Explosives.
c. Thermal cutting tools.
d. Powered handtools.
e. Handtools.
20. a. 3 or more.
b. 2.
c. 1.

4.22 Duress AlarmsFUNCTION

The function of the duress alarms will be to notify appropriate personnel that a duress condition exists in the CAS, in the SAS, or for any security personnel.

CONDITIONSSite Conditions

1. Will duress alarm be located at all manned access controls or guard stations within the PA boundary, including security patrols and both alarm stations?
2. Where will duress alarms be annunciated?
3. How will duress alarms be assessed?
4. Will all manned access control points be provided with a means whereby an employee can, without knowledge of an adversary, initiate a duress alarm when commanded to open a portal?

Performance ConditionsInstallation

5. How will covert initiation of a duress alarm be accomplished?
6. Will identification of duress alarm location be included in the transmitted duress signal?

Operation

7. Will the duress alarm system provide automatic voluntary reaction duress alarm indication, e.g., holster switch or tilt switch?
8. Will the duress alarm automatically open an audio channel which will carry audible sounds, e.g., conversations, in the vicinity of the guard?
9. If covert polling of a duress alarm activating device is employed, how often is polling initiated?
10. Will automatic tape recordings of coded duress alarms be made at the CAS?
11. How often will the duress alarm system performance be checked?

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No, but compensatory measures will exist.
2. a. In a continuously manned central alarm station (CAS) located within the PA, in the continuously manned secondary alarm station (SAS), and at an LLEA.
b. Same as a., but not an LLEA.
3. a. By automatically activated microphones and/or CCTV cameras providing audio and visual coverage of vital points/areas.
b. By manually activated microphones and/or CCTV cameras providing audio and visual coverage of vital points/areas and/or preplanned emergency response procedures.
c. By polling personnel stationed in places where they might observe the subject in duress. (It is assumed that under no circumstances will the subject be polled for validation.)
4. a. Yes, two means (a right and a wrong way), both of which will cause the portal to open, will be provided.
b. No.

Performance ConditionsInstallation

5. a. Duress-initiating devices will be part of the equipment carried/worn by subject.
b. Duress-initiating devices will be installed in locations where they are most likely to be operated during an attack without attracting the attention of the attacking party.
c. Duress will be signalled by intentional failure of subject to perform a routine chore, i.e., to call in.
6. a. Yes.
b. No.

Operation

7.
 - a. A combination of several indicators both automatic and non-automatic will be provided for diversity
 - b. At least one auto indicator will be provided.
 - c. No auto indicators will be provided.
8.
 - a. Yes.
 - b. No.
9.
 - a. Continuously, via transponder or supervisory techniques.
 - b. Automatically, on a cycle determined by the number of polling stations and the data processing rates of the polling device.
 - c. Manually, at intervals specified in a Standard Operating Procedure (SOP).
 - d. Covert polling of the activating device will not be employed.
10.
 - a. Yes.
 - b. No.
11.
 - a. At least at the beginning of each work shift.
 - b. Daily.
 - c. Weekly.

4.23 Electric Field Fence (E-Field) Systems

FUNCTION

The function of the sensor will be to sense penetration through the PA fence.

CONDITIONS

Site Conditions

1. What precautions will be taken to prevent wind-blown material, including trees within 4.5 metres of the sensor, from causing the system to alarm?
2. What will be done to prevent initiation of alarms by animals?
3. If using a fence-mounted configuration, on what type of chain-link fence will the sensor be mounted?

Environmental Conditions

4. On the average, if the wind is expected to exceed 22 m/s (50 MPH) using a free-standing configuration, or 13 m/s (30 MPH) using a fence-mounted configuration, more than 7 days per year, what will be done to minimize wind-caused alarms?
5. What means of lightning protection will be provided?
6. If electromagnetic interference EMI caused by high-voltage transmission lines, RF transmitters, is expected to exist at the site, will tests be conducted to ensure satisfactory sensor performance?

Performance Conditions

Installation

7. What type of posts will be used?
8. What type of wire will be used?
9. What will the wire spacing be if a three-wire configuration is used?
10. What will the minimum wire tension be?
11. What will be done to prevent loss of wire tension?
12. What will the grading specification be for the area along the length and within 1 metre on each side of the sensor?

13. What will the installation specifications for overlapping of sensor sections be?
14. If the sensor will be installed over personnel portals, buildings, etc., will nonconductive posts be used in installation of the sensor?
15. If the sensor will be installed over personnel portals, buildings, etc., will a ground plane over the portal, building, etc., be provided?

Operation

16. What criteria will be used to determine the initial sensor sensitivity setting?
17. How often will the following sensor performance tests be conducted? (See IDS Handbook, Vol. I, Sec. 4.3.4 for definition of these tests.)
 - a. Normal walk.
 - b. Shuffle walk.
 - c. Crawl.

Maintenance

18. Will preventive and routine maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data, if available?

Reliability

19. If the sensor will have self-test capability, what will be the test frequency?

Vulnerabilities

20. What will be the physical location of the signal processing equipment in relation to electric field wires?

Related Questionnaires

21. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System.
 - b. Emergency Generator System.
 - c. Equipment Checks/Maintenance.
 - d. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite Conditions

1.
 - a. All vegetation will be cleared from the vicinity of the sensor and a soil sterilant or other means of permanent vegetation control (asphalt, vinyl plus gravel, soil cement) applied.
 - b. All vegetation will be cleared from the vicinity of the sensor and weedkiller will be used periodically to prevent its return.
 - c. All vegetation will be trimmed and cut on a regular basis.
 - d. No precautions will be taken.
2.
 - a. Either animals are not common to the site, or the sensor system will be enclosed in a fence (this could be a perimeter fence) with fabric buried 30 centimetres or more underground, and all vegetation will be cleared to reduce the probability of animals coming into the vicinity of the sensor.
 - b. The sensor system will be enclosed in a fence (this could be a perimeter fence) with fabric buried 30 centimetres or more underground.
 - c. All vegetation will be cleared to reduce the probability of animals coming into the vicinity of the sensor.
3.
 - a. 2.4 metres or higher, with bottom of fabric buried 30 centimetres or more underground, or a fence-mounted configuration will not be used.
 - b. 2.4 metres or higher, with bottom rail installed and fabric attached to it.
 - c. 2.4 metres or higher, with fabric at ground level, and no bottom rail.

Environmental Conditions

4.
 - a. Support post spacing will be shortened.
 - b. Support post spacing will be shortened and wire tension will be increased.
 - c. Wire tension will be increased.
5.
 - a. (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings, and concrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and

- (2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel, which in turn will be bonded to the structure (Faraday type) shield and a good ground, and
 - (3) At the entry panel, primary surge arresters, e.g., gas-filled spark gaps, will be connected between each cable conductor and ground, and
 - (4) If solid state electronic or other equipment sensitive to short time overvoltage is to be protected, then secondary surge protection, e.g., silicon junction avalanche devices or metal oxide varistors, will be connected at the equipment between each cable conductor and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
- b. All of the above except (1), plus properly installed and grounded lightning rods.
 - c. Only (2) and (3) or, if sensitive equipment, only (2) and (4).
 - d. Only (2).
6. a. Yes, or EMI is not expected to exist at the site.
b. No.

Performance Conditions

Installation

- 7. a. Fiberglass reinforced plastic.
b. Steel pipe.
c. Wood.
- 8. a. Insulated stainless steel.
b. Insulated copper-coated steel.
c. Insulated steel.
- 9. a. Field generator wire will be at the geometric mean of the heights of the two sense wires.

b. Field generator wire will be an equal distance (arithmetic mean) from each sense wire. (This spacing is preferred for fence-mounted configurations.)
- 10. a. 50 pounds.
b. 40 pounds.
c. Less than 40 pounds.

11. a. A wire-tension device will be placed at both ends of all straight 100-metre sectors. If a sector is not straight, at least one tension device will be placed in each segment.
- b. A wire-tension device will be placed at one end of all straight 100-metre sectors. If a sector is not straight, at least one tension device will be placed in each segment.
- c. One wire-tension device will be used for each 100 metres of sensor.
12. a. Constant grade ± 3 centimetres.
- b. Constant grade ± 6 centimetres.
- c. Constant grade ± 9 centimetres.
- d. Constant grade ≥ 9 centimetres.
13. a. Sectors will overlap a distance equal to or greater than the combined length of the tension device and insulator associated with any wire. The separation will be such that the overlap of each system will be in the protection envelope of the other.
- b. Sectors will be back-to-back with one post acting as the tension post for both systems. Tests will be run to ensure that no gap in protection exists at this point.
- c. Systems will be installed in a configuration other than that described in a. or b. above, with the gap between the systems filled by another sensor. Tests will be run to ensure that no gap in protection exists.
14. a. Yes, or this question will not apply.
- b. No.
15. a. Yes, or this question will not apply.
- b. No.

Operation

16. a. Guidance as found in NRC Regulatory Guide 5.44, "Perimeter Intrusion Alarm Systems."
- b. Guidelines in Volume I of Intrusion Detection Systems Handbook when they differ from manufacturer's recommendations.
- c. Manufacturer's recommendations.

17. a. a. With initial installation and daily thereafter.
 b. With initial installation and weekly thereafter.
 c. With initial installation and monthly thereafter.
- b. a. With initial installation and monthly thereafter.
 b. With initial installation and quarterly thereafter.
 c. With initial installation and biannually thereafter.
- c. a. With initial installation and weekly thereafter.
 b. With initial installation and monthly thereafter.
 c. With initial installation and quarterly thereafter.

Maintenance

18. a. Yes, or MTBF data will not be available.
 b. No.

Reliability

19. a. Less than 1 minute.
 b. 1 to 5 minutes.
 c. More than 5 minutes.
 d. There will be no self-test capability.

Vulnerabilities

20. a. It will be separate from the electric field fence line, at least 1 metre inside, and in the protection envelope of another sensor.
- b. It will be mounted at the end of each zone on the inside of the electric field fence line.
- c. It will be separate from the electric field fence line and at least 1 metre inside.
- d. Other (specify).

4.24 Electret Cable and Tilt Switch Fence Sensors

FUNCTION

The function of these sensors will be to sense penetration through the PA fence.

CONDITIONS

Site Conditions

1. Will all items, including trees and bushes, in the proximity of the fence be removed or trimmed to prevent disturbance of the fence?
2. What provisions will be made to ensure detection at points where drainage ditches or culverts cross the fence?
3. What measures will be taken to minimize activation of sensors by personnel having access to the fence?

Environmental Conditions

4. If winds with a velocity greater than 13 m/s (30 MPH) are expected at the site, what measures will be taken to minimize wind-caused alarms?
5. What means of lightning protection will be provided?
6. If onsite sources of electromagnetic interference (EMI) are expected to exist at the site, what measures will be taken to minimize alarms caused by EMI?

Performance Conditions

Installation

7. What criteria will be used to determine sensor installation procedures for such items as sensor spacing, sensor height, sensor mounting, and cable attachment and routing?

Maintenance

8. Will preventive maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data if it is available?

Reliability

9. How often will a full operational test be conducted?
10. If the sensor will have self-test capability, what will be the test frequency?

Related Questionnaires

11. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System
 - b. Emergency Generator Systems
 - c. Equipment Checks/Maintenance
 - d. Tamper-Indicating Circuitry

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.
2. a. Either no such points will exist or physical barriers will be set in place and alarmed.
b. Physical barriers will be set in place.
c. No provisions will be made.
3. a. The outer PA fence line will be placed inside the facility property lines to create a buffer zone from the general public.
b. The area adjacent to the fence will be roped off and designated as off limits to plant personnel.
c. Plant personnel will be informed that the fence is off limits.
d. Nothing will be done; personnel referred to will be general public on public property.

Environmental Conditions

4. a. Either wind-caused alarms are not expected to be a problem, or other sensors will be placed in combination with fence sensors.
b. A wind filter will be used.
c. Sensor sensitivity will be reduced.
d. Sensors will be placed in access during periods of high winds.
5. a. (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings, and concrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and
(2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel, which in turn will be bonded to the structure (Faraday type) shield and a good ground, and

- (3) At the entry panel, primary surge arresters, e.g., gas-filled spark gaps, will be connected between each cable conductor and ground, and
 - (4) If solid state electronic or other equipment sensitive to short-time overvoltage is to be protected, then secondary surge protection, e.g., silicon junction avalanche devices or metal oxide varistors, will be connected at the equipment between each cable conductor and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
- b. All of the above except (1), plus properly installed and grounded lightning rods.
 - c. Only (2) and (3) or, if sensitive equipment, only (2) and (4).
 - d. Only (2).
- 6. a. Either sources of EMI are not expected to be a problem at the site or both shielded, twisted-pair signal cabling and band-pass filtering will be used.
 - b. Shielded, twisted-pair signal cabling will be used.
 - c. Band-pass filtering will be used.
 - d. No measures will be taken.

Performance Conditions

Installation

- 7. a. The manufacturer's recommendations will be used in conjunction with guidelines presented in the Intrusion Detection System Handbook. After installation, the system will run for not less than one week on a test basis.
- b. The manufacturer's recommendations will be used. After installation, the system will be run for not less than one week on a trial basis.
- c. The manufacturer's recommendations will be used.
- d. The criteria used will be different from manufacturer's recommendations because of unique requirements.

Maintenance

- 8. a. Yes, or MTBF data will not be available.
- b. No.

Reliability

9.
 - a. Daily.
 - b. Weekly.
 - c. Monthly.
 - d. Less frequently than monthly.

10.
 - a. Less than 1 minute.
 - b. 1 to 5 minutes.
 - c. More than 5 minutes.
 - d. There will be no self-test capability.

4.25 Emergency Access/EgressFUNCTION

The function of the emergency access/egress procedure will be to provide access controls and surveillance of emergency vehicles and personnel.

CONDITIONSSite Conditions

1. How will fire alarms be initiated?
2. How will medical alarms be initiated?
3. How will criticality alarms be initiated?
4. Will all alarms (fire, medical, and criticality) be channeled through the security operations centers.
5. Will the security operations center actually initiate the emergency vehicle request(s)?

Performance ConditionsOperation

6. Will a description of the type of emergency vehicle dispatched and the number of personnel accompanying it be obtained from the emergency vehicle dispatcher?
7. Will security personnel stationed at the affected areas be notified of the pending arrival of the emergency vehicle, its description, and the number of emergency personnel accompanying it?
8. Will the emergency be verified before emergency vehicle and personnel access into or egress from a restricted area is allowed?
9. What means will be used to verify a medical emergency?
10. What means will be used to verify an emergency involving fire?
11. What means will be used to verify a criticality emergency?
12. If emergency vehicles are maintained within the facility perimeter, will they be located within material access areas?

13. Will all emergency vehicle and personnel movement, whether by a facility emergency vehicle or not, be under guard escort?
14. Will at least two security personnel maintain surveillance of the emergency vehicle at all times while it is in the facility perimeter?
15. Will articles and/or personnel removed from material access areas by emergency vehicles be examined with handheld SNM detectors prior to exit?
16. If the alarm proves to be false or if the emergency is of a controllable nature, will normal vehicle and/or personnel screening procedures be used where possible?

Related Questionnaires

17. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Escorts.

ANSWERSCONDITIONSSite Conditions

1.
 - a. Fire alarms will be initiated from designated fire alarm stations located throughout the facility.
 - b. Fire alarms will be initiated by dialing a fire emergency number which is accessible only from facility phones.
 - c. Fire alarms will be initiated by dialing a fire emergency number accessible from any phone.
 - d. Fire evacuation alarms will be initiated automatically by heat or smoke sensors.
2.
 - a. Medical alarms will be initiated by dialing a medical emergency number which is accessible only from facility phones.
 - b. Medical alarms will be initiated by dialing a medical emergency number which is accessible from any phone.
3.
 - a. Radiation sensors will initiate criticality alarms automatically.
 - b. Criticality alarms will be initiated from designated alarm stations located in key areas.
4.
 - a. Yes.
 - b. No.
5.
 - a. Yes.
 - b. No.

Performance ConditionsInstallation

6.
 - a. Yes.
 - b. No.
7.
 - a. Yes.
 - b. No.
8.
 - a. Yes.
 - b. No.
9.
 - a. Verification of a medical emergency will be performed by two security personnel in direct attendance.

- b. Verification of a medical emergency will be performed by one security person in direct attendance.
 - c. No verification of a medical emergency will be enforced.
- 10.
- a. Verification of an emergency involving fire will be performed by two security personnel through direct surveillance.
 - b. Verification of an emergency involving fire will be accomplished by means of sensors which activate automatically.
 - c. No verification of an emergency involving fire will be enforced.
- 11.
- a. Verification of a criticality emergency will be accomplished by means of sensors which activate automatically.
 - b. No verification of a criticality emergency will be enforced.
- 12.
- a. No.
 - b. Yes, but access to these emergency vehicles will be under security supervision, and the vehicles will be under continuous surveillance.
 - c. Yes.
- 13.
- a. Yes.
 - b. No.
- 14.
- a. Yes.
 - b. No.
- 15.
- a. Yes, and a search for covert articles and personnel will be made.
 - b. Yes, but no search will be made for covert articles or personnel.
 - c. No.
- 16.
- a. Yes.
 - b. No.

4.26 Emergency Battery System (EBS)FUNCTION

The function of the EBS will be to provide emergency power for a component or system used in detection, alarm transmission, or assessment.

CONDITIONSSite Conditions

1. Will the EBS be located within a protected area?

Environmental Conditions

2. Will there be environmental conditions which are detrimental to EBS operation?

Performance Conditions

3. Will the EBS battery be rechargeable? If yes, omit questions 12 through 14. If no, omit questions 4 through 9.
4. Will the EBS carry the design load until charger input power can be restored after a commercial (or normal) power failure?
5. If the EBS cannot carry the load until power restoration, how will the load be handled until charger power returns?
6. If the charger input power cannot be restored, how long will the EBS carry the load?
7. Which of the critical operating conditions of the EBS will be monitored?
8. Assuming that the emergency battery has been used to discharge, how soon will the EBS return to a 90 percent charge state after reapplication of charger power?
9. Will the EBS be functionally tested without charger input?
10. Will an indication occur in the CAS/SAS upon switchover to the EBS indicating that the systems transferred from primary to emergency power?
11. Will preventive and routine maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?
12. If the EBS battery is nonrechargeable, will loss of battery output cause an alarm?

13. If the EBS battery is not rechargeable, will it be replaced on a schedule supported by battery use and shelf-life data?
14. If the EBS battery is not rechargeable, how often will it be routinely operated with load to determine if it is functional?

Vulnerabilities

15. What security will be provided for the EBS?

Related Questionnaires

16. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.

Environmental Conditions

2. a. Yes, at times.
b. No.
3. a. Yes.
b. No.
4. a. Yes.
b. No.
5. a. By an emergency generator with automatic transfer switch.
b. By an emergency generator with manual transfer switch.
c. By other alternate charger power.
6. a. 24 hours or greater.
b. 8-24 hours.
c. 1-8 hours.
7. a. The charger output and battery output failure.
b. The charger output.
c. None.
8. a. 1-12 hours.
b. 12-24 hours.
c. Greater than 24 hours.
9. a. Yes.
b. No.
10. a. Yes, in both CAS and SAS
b. Yes, only in the CAS.
11. a. Yes.
b. No.
12. a. Yes, or the EBS battery will be rechargeable.
b. No.
13. a. Yes.
b. No.

14. a. Approximately once per week.
- b. Approximately once per month.
- c. Approximately once every six months.

Vulnerabilities

15. a. Security patrols, locked buildings or cabinets, space and tamper alarms.
- b. Security patrols, space and tamper alarms.
- c. Tamper alarms.
- d. None.

4.27 Emergency Evacuation ProceduresFUNCTION

The function of the emergency evacuation procedure will be to provide swift evacuation of personnel while maintaining physical security.

CONDITIONSPerformance Conditions

1. How will a criticality evacuation be initiated?
2. How will a fire evacuation be initiated?
3. Will personnel be briefed on the routes and procedures to follow during an emergency?
4. Will emergency exit doors be alarmed?

Questions 5 through 10 refer to tunnels, corridors, or similar structures which will be used to channel an evacuation from a material access area to a holding area.

5. Will the channeling structure be as effective a barrier as the area where it is located?
6. Will the holding area be as effective a barrier as the area where it is located?
7. If further evacuation from the holding area is required, will contraband screening be as effective as that enforced on routine material access area exits?
8. Will it be possible to pass or toss contraband articles into the protected area from the tunnel or corridor?
9. Will it be possible to pass or toss contraband articles into the protected area from the holding area?
10. Following an evacuation drill or false alarm, will the tunnel or corridor and the holding area be searched for the presence of contraband material?

Questions 11 through 19 refer to tunnels, corridors, or similar structures which will be used to channel an evacuation to a holding area, i.e., evacuation center, from an area other than a material access area.

11. Will evacuation routes be conspicuously marked to clearly indicate the desired flow of personnel traffic?
12. Will security surveillance of evacuation routes be maintained during emergency evacuations?
13. During scheduled drills, will security personnel be stationed along evacuation routes to supervise traffic flow and to look for suspicious activity?
14. Will the evacuation center be within the protected area?
15. What type of containment, if any, will be used at the evacuation center?
16. Will security surveillance of the evacuation center be maintained during emergency evacuation?
17. If further evacuation from the evacuation center is required, will contraband screening be as effective as that enforced on routine material access area exit?
18. Following an evacuation drill or false alarm, will the evacuation routes and the evacuation center be searched for the presence of contraband material?
19. Following any evacuation, actual or drill, will a survey be made for missing nuclear material in the material access area?

ANSWERSCONDITIONSPerformance Conditions

1.
 - a. Criticality evacuation alarms will be initiated automatically by radiation monitors or sensors.
 - b. Criticality evacuation alarms will be initiated manually from designated alarm stations.
2.
 - a. Fire evacuation alarms will be initiated from designated fire alarm stations located throughout the facility.
 - b. Fire evacuation alarms will be initiated from the security operations center following a phone call to a fire emergency number accessible only from facility phones.
 - c. Fire evacuation alarms will be initiated from the security operations center following a phone call to a fire emergency number accessible from any phone.
 - d. Fire evacuation alarms will be initiated automatically by heat or smoke sensors.
3.
 - a. Yes, there will be written procedures.
 - b. Yes.
 - c. No.
4.
 - a. Yes, both locally and remotely (CAS) annunciated.
 - b. Yes, locally annunciated only.
5.
 - a. Yes.
 - b. No.
6.
 - a. Yes.
 - b. No.
7.
 - a. Yes.
 - b. Screening will probably be rushed, but remain effective.
 - c. No, it will not be as effective due to the emergency nature of the situation.
8.
 - a. No.
 - b. Yes, but CCTV and/or direct surveillance will be used to detect such actions.
 - c. Yes.

9. a. No.
b. Yes, but CCTV and/or direct surveillance will be used to detect such actions.
c. Yes.
10. a. Yes.
b. No.
11. a. Yes.
b. No.
12. a. Yes.
b. No.
13. a. Yes.
b. No.
14. a. Yes.
b. No.
15. a. A building.
b. A walled perimeter.
c. A fenced perimeter.
d. No containment will be used.
16. a. Yes.
b. No.
17. a. Yes.
b. Screening will probably be rushed but remain effective.
c. No, it will not be as effective due to the emergency nature of the situation.
18. a. Yes.
b. No.
19. a. Yes.
b. No.

4.28 Emergency Exits and Associated Hardware

FUNCTION

The function of the emergency exit will be to delay adversary access to Controlled Access Areas in order to aid detection, assessment, and response.

CONDITIONS

Site Conditions

1. What is the size of the door?
2. Will the emergency exit empty into a controlled access area?
3. Will the door be visible from outside the Protected Area?

Performance Conditions

4. What type door will be installed in the emergency exit?
5. What is the material of construction?
6. What is the thickness of the door?
7.
 - a. Is the door made of composite construction or hollow-core design?
 - b. If composite construction, what is the nature of the core?
8.
 - a. Are portals built into the door?
 - b. If so, what type portals are they?
9. Will the emergency exit door frame be anchored to the wall so as to equal the outside penetration resistance of the door?
10. Are the penetration times for the hinges, locking mechanism, and panic bar equivalent to the outside penetration time of the emergency exit door?
11. Will the penetration time(s) for the door be equivalent to that for the adjacent barriers?
12. What will be the probable penetration time(s) for the emergency exit door?
13. Will the emergency exit employ redundant barriers and/or diverse materials to increase penetration delay?
14. Where will the emergency exit alarm be annunciated?
15. How often will the alarm be checked?

16. a. Will the emergency exit be tamper-sealed?
b. How often will the integrity of the seal be verified?
17. How will the emergency exit be tamper-sealed?
18. Will the emergency exit have assessment capabilities?

Vulnerabilities

Adversary Attributes

19. What classes of tools will correspond to the above penetration time(s) for the emergency exit?
20. What number of persons carrying out the penetrations are associated with the above penetration time(s)?

ANSWERSCONDITIONSPerformance Conditions

1. (Specify dimensions).
2. a. Yes.
b. No.
3. a. No.
b. Yes.
4. a. A high-security custom-designed door.
b. A high-security standard-design door.
c. A solid-core metal door.
d. A hollow-core metal door.
5. a. $>1/2''$ solid steel door.
b. $<1/2''$ but $>1/4''$ solid steel door.
c. $<1/4''$ steel plate.
d. 16 gage steel surface plates (0.060").
e. 18 gage steel surface plates (0.048").
6. a. $>3/4''$ thickness.
b. $<3/4''$ thickness.
7. a. (1) Composite construction.
(2) Hollow-core.

b. (1) Noncombustible slab.
(2) Metal channels.
(3) Redwood.
(4) Polyurethane foam.
8. a. (1) No.
b. (2) Yes.

b. (1) Grill.
(2) Mesh.
(3) Louvers
(4) Glass.
9. a. Yes.
b. No.
10. a. Yes.
b. No.

11. a. Yes.
b. No.
- 12.
13. a. Yes.
b. No.
14. a. By remote annunciation in the CAS and SAS, with local audible and visible indications.
b. By remote annunciation in the CAS, with local audible and visible indications.
c. By local audible and visible indication.
15. a. At each shift.
b. Daily.
c. Weekly.
d. Monthly.
- 16 a. (1) Yes.
(2) No.
- 16 b. (1) Once each shift.
(2) Once each 24-hour period.
(3) Weekly.
(4) Monthly.
17. a. The exit will be sealed so that it cannot be opened any amount without breaking the seal.
b. The exit will be sealed so that it cannot be opened far enough to pass material through without breaking the seal.
18. a. Yes.
b. No.

Vulnerabilities

19. a. Vehicles as rams.
b. Explosives.
c. Thermal cutting tools.
d. Powered hand tools.
e. Hand tools.
20. a. 3 or more.
b. 2.
c. 1.

4.29 Emergency Generator Systems (EGS)

FUNCTION

The function of the EGS will be to provide emergency power for a component or system used in detection, alarm transmission, or assessment.

CONDITIONS

Site Conditions

1. Will the EGS be located within a protected area?

Environmental Conditions

2. Will there be environmental conditions which are detrimental to EGS operation?

Performance Conditions

3. Will the EGS, after startup and transfer, carry the design load until input power can be restored after a commercial or normal power failure?
4. How will the safeguards and security components remain functional until the EGS picks up the critical load?
5. If a system of EGS and UPS will not be used to carry the load until the EGS comes on line, how long will the nonfunction time be?
6. How long can the EGS operate on a full fuel tank?
7. Which of the critical operating conditions of the EGS will be monitored?
8. Will preventive and routine maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?
9. How often will the EGS be self-tested?
10. How often will the EGS be functionally tested?

Vulnerabilities

11. What security will be provided for the EGS?

Related Questionnaires

12. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.

Environmental Conditions

2. a. No (environment controlled).
b. Yes, temperature extremes (environment partly controlled).
c. Yes, temperature extremes, air contamination, dust, moisture, etc. (environment uncontrolled).

Performance Conditions

3. a. Yes.
b. No.
4. a. By using an emergency battery system (EBS) and/or uninterruptible power systems (UPS).
b. No way will be provided because the security system can tolerate outage time.
5. a. Less than 2 seconds, or a system of EGS and UPS will be used.
b. 2-10 seconds.
c. 10 seconds - 2 minutes.
d. 2-10 minutes.
e. Greater than 10 minutes.
6. a. Greater than 24 hours.
b. 16-24 hours.
c. 8-16 hours.
d. 1-8 hours.
7. a. Normal power, emergency power, and battery low, if applicable.
b. Normal power, emergency power.
c. None.
8. a. Yes.
b. No.
9. a. Approximately once per week.
b. Approximately once per month.
c. Approximately once every six months.
d. Approximately once per year.

10. a. Approximately once per month.
- b. Approximately once every six months.
- c. Approximately once per year.

Vulnerabilities

11. a. Security patrols, locked buildings or cabinets, space and tamper alarms.
- b. Security patrols, space and tamper alarms.
- c. Security patrols and tamper alarms.
- d. Tamper alarms.
- e. None.

4.30 Equipment Checks/Maintenance

FUNCTION

The function of the equipment checks and maintenance procedure will be to provide a means of maintaining the equipment in operating condition.

CONDITIONS

Performance Conditions

1. Will all checks and maintenance performed on physical protection equipment be authorized and scheduled by facility management?
2. Will the security organization be notified before and after service is performed?
3. Will corrective action procedures and compensatory measures be developed to ensure that the physical protection system effectiveness is not reduced by individual equipment failure?
4. How will repairs, maintenance, and close-out inspections be performed?
5. Will equipment operability tests be performed on equipment after repair or maintenance?
6. Will the security organization be required to conduct performance verification after the completion of service?
7. Will accurate records be kept of regular maintenance inspections, requests for service, repairs, adjustments, replacements, or additions to equipment, including records of trouble calls indicating date of call and nature of repairs completed?
8. Will an independent organization, i.e., neither security nor maintenance, within the licensee plant management audit the performance of the test and maintenance program?
9. How often will performance audits of the checks and maintenance program be performed?
10. For how long will records of performance audits be retained?

ANSWERSCONDITIONSPerformance Conditions

1. a. Yes.
b. No.
2. a. Yes.
b. No.
3. a. Yes.
b. No.
4. a. (1) They will be performed by at least two individuals working as a team who will be trained in the operation and performance of the equipment.
(2) At completion of work, a close-out inspection will be performed.
b. Answer (1) above.
5. a. Yes, the equipment will be tested to ensure proper operation and to guarantee that performance has not been reduced.
b. No, but equipment is operationally tested at least once per shift.
c. No, but equipment is operationally tested at least once per week.
6. a. Yes.
b. No.
7. a. Yes.
b. No.
8. a. Yes.
b. No.
9. a. At least every 12 months.
b. Less often than every 12 months.
10. a. All records of performance audits will be kept.
b. Records will be kept 5 years.

4.31 EscortsFUNCTION

The function of the escort procedure will be to monitor vehicles and the activities of persons whose access authorization (under normal and emergency conditions) to a particular area (PA, MAA, VA) requires the presence of an escort.

CONDITIONSPerformance Conditions

1. Will the categories of persons and vehicles requiring escorts be clearly delineated?
2. Will escorts be required for visitors; vendors and their vehicles; maintenance, construction, and repair personnel and their vehicles; and emergency personnel and their vehicles?
3. Will access to an area be permitted only after the person is accompanied by the designated escort?
4. What procedure will be used to ensure that a person will be escorted at all times when there is going to be a transfer of escort responsibility while the person is in the area?
5. Will persons requiring an escort be required to wear a badge (which clearly indicates that an escort is required) in full view at all times while in the area?
6. Will facility personnel be instructed to assume escort responsibility for an unescorted person wearing an "escort required" badge and to notify the security organization immediately?
7. What precautions will be taken to minimize the possibility of collusion between one insider (the escort) and one or more outsiders?
8. What precautions will be taken to minimize the possibility of an escort being overpowered by escorted personnel?

ANSWERSCONDITIONS

1. a. Yes.
b. No.
2. a. Yes, all individuals not employed by the licensee (and their vehicles).
b. Yes, but not for a vendor or other individual who requires extended and frequent access.
3. a. Yes.
b. No.
4. a. This question does not apply, or
 - (1) Before the person (and his vehicle) is granted escorted access to the area, a schedule will be provided to the security organization of all responsible escorts and the corresponding times of escort; and
 - (2) Each escort will be required to sign a form showing transfer of escort responsibility; and
 - (3) Each escort will be instructed to remain with the escorted person until the next escort assumes responsibility.
 - b. Same as (1) and (3) above.
 - c. Same as (2) above.
 - d. Same as (3) above.
5. a. Yes.
b. No.
6. a. Yes.
b. No.
7. a.
 - (1) Visitor(s) will be required to pass through one or more entry control zones commensurate with the level of access authorization; and
 - (2) Visitor(s) will be escorted by the internal contact unless access to an MAA or VA is required, in which case a randomly selected member of the security organization will escort the visitor; and
 - (3) When in the MAA or VA, escorted personnel will be under surveillance by someone other than the escort, e.g., by CCTV monitor.

- b. Same as (1) and (2) above.
 - c. Visitors will be escorted by the internal contact in all cases.
 - d. No special precautions will be taken.
- 8.
- a. (1) All visitors will be subject to a contraband (weapons, etc.) search prior to access; and
 - (2) Any security organization escort will be armed and equipped with a duress alarm; and
 - (3) The number of escorts will be a function of the number of persons to be escorted.
- b. Same as (1) and (2) or (1) and (3) above.
 - c. Same as (1) above.
 - d. No special precautions will be taken.

4.32 Explosive Detector

- Hand-held Package Search

FUNCTION

The function of the search will be to detect explosives being introduced in packages through the PA, MAA, or VA.

CONDITIONSSite ConditionsInstallationMaintenance

1. In essence, will the detector be used as an aid in a visual package search procedure?
2. Will all packages be searched?
3. Will a large throughput of packages force security to hurry their search?
4. How much time will be spent in implementing a search?
5. To reduce false alarms, will the explosives detector be used to check the areas where the packages are to be searched?
6. Will smoking be controlled in the search area so that no false alarms will result?
7. What procedure will be used when an alarm occurs?
8. Will the detector be calibrated to detect dynamite, TNT, and similar nitrogen compounds in a minimum amount of 200 grams, with 90 percent confidence and a false alarm rate not exceeding 1 percent?
9. Will each package be searched thoroughly?
10. Will the operator be trained in the proper use of the explosives detector using written procedures?
11. Will all packages that cause an irregular response of the detector be subjected to additional search?

Maintenance

12. How often will the detector be checked with an explosive sample to ascertain proper operation?

13. If a detector, membrane type, will be used, will a regular membrane replacement schedule be followed?
14. Will care be exercised by the guard doing the checking of the explosives test sample to prevent self-contamination or contamination of the area?
15. Will an operational spare be available in case of detector failure?

Related Questionnaires

16. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSPerformance ConditionsOperation

1. a. Yes.
b. No.
2. a. Yes.
b. Search will be on a random basis; more than 50 percent of packages will be searched.
c. Search will be on a random basis; between 10 percent and 50 percent of packages will be searched.
d. Search will be occasional, with less than 10 percent of the packages searched.
3. a. No.
b. Yes.
4. a. Approximately one minute.
b. Approximately 30 seconds.
c. Approximately 15 seconds.
5. a. Yes.
b. No.
6. a. Yes, smoking will not be permitted in the search area.
b. No control will be exercised.
7. a. The alarm will be reported to the security operations center and the suspect package will be removed to a remote area for additional testing.
b. The alarm will be reported to the security operations center.
8. a. Yes.
b. No.
9. a. Yes, each package will be checked for explosives vapors at every joint or opening. In addition, the package will be compressed slightly, with the detector being held at the most prominent hole or opening, to assure sampling of internal vapors.
b. The package will be scanned quickly.

10. a. Yes, the operator will be trained in proper operating techniques using written procedures.
b. No written procedures will be used, but the operator will be trained and instructed to use his own judgment.
11. a. Yes.
b. No.

Maintenance

12. a. Every hour or more often.
b. Every 2 hours.
c. Daily.
13. a. Yes, or a membrane-type detector will not be used.
b. No.
c. The membrane will be replaced only when need is indicated.
14. a. Yes.
b. No.
15. a. Yes.
b. No.

4.33 Explosive Detector

- Hand-held Personnel Search

FUNCTION

The function of the search will be to detect explosives being introduced by personnel through the PA, MAA, or VA.

CONDITIONS

Performance Conditions

Operation

1. Will all personnel be searched at every entrance and exit?
2. Will long lines force security to hurry their search?
3. How much time will be spent in implementing a search?
4. To reduce false alarms, will the explosives detector be used to check the area where the searches will be held?
5. Will smoking be controlled in the search area so that no false alarms will result?
6. Will each individual be thoroughly searched?
7. Will the guard be cautioned to be aware of unusual bulges or bumps under clothing?
8. Will all packages in pockets be examined?
9. Will all containers and packages carried by the individual be opened and examined?
10. Will all individuals who cause an irregular response of the detector be subjected to a pat-down search?

Maintenance

11. How often will the detector be checked with an explosive sample to ascertain proper operation?
12. If a detector, membrane type, will be used, will a regular membrane replacement schedule be followed?

13. Will care be exercised by the guard doing the checking of the explosives test sample to prevent self-contamination or contamination of the area?
14. Will an operational spare be available in case of detector failure?

Related Questionnaires

15. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSPerformance ConditionsOperation

1. a. Yes.
b. Search will be on a random basis, more than 50 percent of all personnel will be searched.
c. Search will be on a random basis, between 10 percent and 50 percent of all personnel will be searched.
d. Search will be an occasional random search, less than 10 percent of personnel will be searched.
2. a. No.
b. Yes.
3. a. Approximately 1 minute.
b. Approximately 30 seconds.
c. Approximately 15 seconds.
4. a. Yes.
b. No.
5. a. Yes, smoking will not be permitted in the search area.
b. No control will be exercised.
6. a. Each individual will be thoroughly searched over the entire body, hats and bulky overcoats will be removed.
b. A quick search scanning the entire body will be made.
c. Only a cursory search will be made.
7. a. Yes.
b. No, the guard will rely on the detector.
8. a. Yes.
b. No.
9. a. Personnel will not be allowed to carry packages in the area.
b. All briefcases, lunch boxes, and packages, will be opened and examined.
c. No.

- 10. a. Yes.
- b. No.

Maintenance

- 11. a. Every hour or more often.
 - b. Every 2 hours.
 - c. Daily.
-
- 12. a. Yes, or a membrane-type detector will not be used.
 - b. No.
 - c. The membrane will be replaced only when the need is indicated.
-
- 13. a. Yes.
 - b. No.
-
- 14. a. Yes.
 - b. No.

4.34 Explosive Detector

- Hand-held Vehicle Search

FUNCTION

The function of the search will be to detect explosives being introduced in vehicles at the protected area (PA).

CONDITIONS

Performance Conditions

Operation

1. Will a material transfer dock be utilized wherever possible in order to limit vehicle access into the protected area?
2. Will a remote area be provided for the search?
3. How often will the remote area be searched to ensure the area is "clean" of materials that might cause false alarms?
4. Will the remote area be clear of odor, e.g., vapors from chemical plants, which might impair the efficiency of the detector?
5. Will the vehicle motor be turned off during the search?
6. Will the driver be searched for contraband and then removed from the area before the vehicle search?
7. Will lifts, ramps, and/or a drive-over pit be provided so that the operator with the detector can access all areas of the vehicle?
8. Will tools be provided to access likely hiding areas, e.g., hubcaps, tool covers?
9. Will the equipment be calibrated to detect dynamite, TNT, and similar nitrogen components in a minimum amount of 200 grams, with 90 percent confidence and a false alarm rate not exceeding 1 percent?
10. How thorough an examination will be made during each search?
11. In case of a "find" or a "false alarm," will the search be continued for additional explosives secreted in the vehicle?
12. If a "find" is made, to whom will the alarm be transmitted?

13. Will all possible areas available for secreting explosives be searched, e.g., the undercarriage, the spare-tire racks, the wheel wells, the hubcaps, the tool boxes?
14. Will the area under the hood be thoroughly searched?
15. Will the cab area be searched, e.g., under the seats, behind the seats, under the dash, above the sun visors?
16. Will the operator be prepared to search as soon as enclosed volumes are opened?
17. Will the doors themselves be checked?
18. Will packages and other articles carried in the vehicle be searched thoroughly?
19. Will the operator be observant for fine wires in areas where wire is not usually found, e.g., tires, shift knob, steering wheel?
20. Will the operator check in unusual places where the odor of the explosive will be obscured from the detector, e.g., in the gas tank, in tires?

Maintenance

21. How often will the detector be checked with an explosives sample to ascertain proper operation?
22. If a membrane-type detector is used, will a regular membrane replacement schedule be followed?
23. Will care to prevent self-contamination and area contamination be exercised by the guard doing the checking of the explosives test sample?
24. Will an operational spare be available in case of detector failure?

Related Questionnaires

25. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSPerformance ConditionsOperation

1. a. Yes.
b. No.
2. a. Yes.
b. No, but a separate area will be provided.
c. No.
3. a. Daily.
b. Weekly.
c. Monthly.
4. a. Yes.
b. No.
5. a. Yes.
b. No.
6. a. Yes.
b. The driver will be searched but not removed.
c. The driver will not be searched for contraband.
7. a. Yes.
b. No.
8. a. Yes.
b. No.
9. a. Yes.
b. No.
10. a. Two passes will be made during each search.
b. One pass will be made during each search.
c. One hurried pass will be made during each search.
11. a. A "find" or "false alarm" will be removed and the search continued.
b. A "find" or "false alarm" will be noted and the search continued.
12. a. The alarm will be transmitted to the security operations center.
b. Local law enforcement agencies will be contacted directly.

13. a. Yes.
b. A random search of possible areas will be made.
c. No.
14. a. Yes, from above and below.
b. Only from above.
c. Not at all.
15. a. Yes.
b. No.
16. a. Yes, the operator will be prepared to start the search immediately to ensure sampling of accumulated vapors.
b. No, doors, etc., will be opened as soon as the vehicle enters the area, and the search will be random.
17. a. Yes, the doors will be searched to ensure that no explosives are hidden there.
b. No.
18. a. Yes, each article will be searched individually.
b. Packages will not be searched individually.
19. a. Yes, the operator will be trained in what to look for to detect explosives.
b. No, the operator will rely on the detector only.
20. a. Yes, gas caps will be removed to ensure no explosives are suspended from them.
b. No.

Maintenance

21. a. Every hour or more often.
b. Every two hours.
c. Daily.
22. a. Yes, or a membrane-type detector will not be used.
b. No.
c. The membrane will be replaced only when the need is indicated.
23. a. Yes.
b. No.
24. a. Yes.
b. No.

4.35 Explosive Detector

- Volume

FUNCTION

The function of the explosive detector is to detect explosives being introduced at the PA, MAA, or VA entry.

CONDITIONSSite Conditions

1. Will the detector be mounted in a booth or similar structure to confine personnel during the explosives search?
2. Will there be an audio communication link between security and the area where personnel are searched?
3. If an alarm occurs, will it be possible to reset the detector for a second scan without requiring personnel to exit and reenter?
4. What alternate method will be used to search personnel when an alarm occurs?

Environmental Conditions

5. Will the temperature within the booth be controlled?
6. Will smoking be prohibited in the booth area?
7. Will the atmosphere within the booth be as dust-free as possible?
8. Will guards be alerted to "scents" which might cause "nuisance" alarms (i.e., perfumes, chemicals, deodorants, shoe polish)?

Performance ConditionsOperation

9. Will the equipment be calibrated to detect dynamite, TNT, and similar nitrogen components in a minimum amount of 200 grams, with 90 percent confidence and a false alarm rate not exceeding 1 percent?
10. Will the screening be individual?
11. How much time will be allowed to sample the booth air?

12. Will a device be used to "concentrate" the explosives vapors from a large volume of booth air before the vapors are presented to the detector?
13. Will the sampling port of the detector be placed low in the booth?

Maintenance

14. Will it be possible to self-test the detector remotely?
15. How often will the functional check be made?
16. If a membrane-type detector is used, will a regular membrane replacement schedule be followed?
17. What means of detection will be available should the detector fail?

Related Questionnaires

18. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.
2. a. Yes.
b. No.
3. a. Yes.
b. No.
4. a. Personnel will be requested to exit through the door entered and proceed to a bypass portal where manual screening will be implemented by the use of a hand-held explosives detector or pat-down search.
b. A guard will implement a search by the use of a hand-held explosives detector or pat-down search after the individual has been admitted into the secured area.

Environmental Conditions

5. a. Yes.
b. No.
6. a. Yes.
b. No.
7. a. Yes.
b. No.
8. a. Yes.
b. No.

Performance ConditionsOperation

9. a. Yes.
b. No.
10. a. Yes.
b. No.

11.
 - a. One minute sampling time will be allowed.
 - b. Thirty seconds sampling time will be allowed.
 - c. Ten seconds sampling time will be allowed.
12.
 - a. Yes.
 - b. No.
13.
 - a. Yes.
 - b. No, the sampling port will be placed high in the booth, as booth air will be circulated upwards.
14.
 - a. Yes.
 - b. No, but a guard will carry an explosive simulant into the booth to verify operation.
 - c. No.
15.
 - a. Once per hour or more often if the need is indicated.
 - b. Once per 2-hour interval.
 - c. Once per shift.
16.
 - a. Yes, or a membrane-type detector will not be used.
 - b. No.
 - c. The membrane will be replaced only when the need is indicated.
17.
 - a. An operational spare will be available, or the detector will be one of several in use.
 - b. A hand-held detector will be used.
 - c. A pat-down search will be performed.
 - d. None.

4.36 Explosive Detector

- Walk-Through

FUNCTION

The function of the explosive detector will be to detect explosives being introduced by personnel at the PA, MAA, or VA entry.

CONDITIONS

Site Conditions

1. Will hand-carried articles be separated from personnel for independent examination?
2. Will the detector be operated as an adjunct to a guard who is present?
3. Will the location be checked periodically to assure no contamination?
4. Will adequate space be provided to assure no restriction on the detector's air flow pattern?
5. Will provisions be made to prevent extraneous air movement from disturbing or disrupting the detector's regular air flow pattern?
6. Will provisions be made to assure only one person can pass through the sampling space at one time?
7. Will smoking be prohibited in the area?
8. If more than one detector will be used to handle throughput, will contaminated air pass from detector to detector causing alarms in all?
9. Will guard surveillance be such that there will be a high probability of detection of an attempt to "toss" or "throw" an explosive through the detector?

Performance Conditions

Operation

10. Will the equipment be calibrated to detect dynamite, TNT, and similar nitrogen components in a minimum amount of 200 grams with 90 percent confidence and a false alarm rate not exceeding 1 percent?
11. Since these detectors are "pause" detectors, is the required pause time compatible with personnel throughput requirements?

12. Will the person being searched be asked to remove overcoat, jackets, etc., to ensure proper search?
13. What procedures will be followed by security personnel if an alarm occurs?
14. If explosives are found, to whom will the alarm be reported?

Maintenance

15. How often will the detector be checked for proper operation?
16. Will the equipment be checked periodically for contamination?
17. For detectors utilizing membranes, is the manufacturer's recommended membrane replacement schedule followed?
18. What means of detection will be available should the detector fail?

Related Questionnaires

19. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSSite Conditions

1. a. Yes, x-ray examination will be used.
b. Yes, visual inspection will be used.
c. No.
2. a. Yes.
b. No, the detector will be operated remotely.
c. No.
3. a. Daily.
b. Weekly.
c. No.
4. a. Yes.
b. No.
5. a. Yes.
b. No.
6. a. Yes.
b. No.
7. a. Yes.
b. No.
8. a. No, the detector's exhaust air is vented from the area.
b. No, the detectors will be spaced (staggered) to minimize this effect.
c. Yes, the detectors are positioned so that this can present an operational problem.
9. a. Yes.
b. No.

Performance ConditionsOperation

10. a. Yes.
b. No.
11. a. Yes.
b. No.

12. a. Yes.
b. No.
13. a. The person will be required to pass through the detector again. If an alarm occurs, he will be subject to a hand-held detector or pat-down search until the cause of alarm is determined.
b. A pat-down search.
14. a. A detection will be reported to the security operations center.
b. Local law enforcement agencies will be contacted directly.
c. No alarm will be transmitted.

Maintenance

15. a. Hourly.
b. Daily.
c. Weekly.
16. a. Yes.
b. No.
17. a. Yes, or a membrane type detector will not be used.
b. No.
18. a. An operational spare will be available, or the detector will be one of several in use.
b. A hand-held detector will be used.
c. A pat-down detector will be used.
d. None.

4.37 Fence SystemsFUNCTION

The function of the fence will be to provide delay to the adversary in order to aid detection, assessment, and response.

CONDITIONSSite Conditions

1. What is the nature of the surface beneath the fence?
2. Will erosion under the fence be a problem?
3. Will corrosion of the fence be a problem?
4. Are there to be natural features or vegetation near the fence which might interfere with detection or assessment?
5.
 - a. Are there any openings in the fence?
 - b. What size(s) are they?
6. Will culverts under the fence have grills or other barriers installed that will adequately delay entry or exit?

Performance Conditions

7.
 - a. Does fence fabric extend below ground or is it only above?
 - b. How far?
8. What will be the height of the fence?
9.
 - a. Will the posts be anchored in concrete?
 - b. How deeply will they be anchored?
10. What is the distance between posts?
11. How will the fence bottom be anchored?
12. Which overhang design is used?
13. What will be the fence top conditions?
14. What is the material of construction for the fence?
15. Considering all feasible adversary tools, what will be the lowest mean penetration time(s) for the particular fence system design? (See Barrier Technology Handbook and other references.)

16. Will blind spots exist along the fence?
17. Will the fence be clearly lighted?
18. a. Is the fence separated from any other physical barrier?
b. If so, what is the minimum distance?
19. Will there be vehicle barriers in conjunction with the fence?
20. How many fences will be in sequence?
21. If there will be 2 or more fences in sequence, what will be between them?
22. If there are rolls of barbed tape between fences, how many rolls will be used?
23. What will be the total penetration time(s) for all fences (in sequence) and included obstacles? (See Barrier Technology Handbook and other references.)

Vulnerabilities

24. What class(es) of tools correspond to the above penetration time(s) for fence penetration?
25. What number(s) of persons carrying out the penetrations are associated with the above penetration time(s)?

ANSWERSCONDITIONSSite Conditions

1.
 - a. Concrete.
 - b. Asphalt.
 - c. Firm ground.
 - d. Soft ground.
 - e. Other (specify).
2.
 - a. No.
 - b. Yes.
3.
 - a. No.
 - b. Yes.
4.
 - a. No.
 - b. Yes.
5.
 - a. (1) Yes.
(2) No.
5.
 - b. (1) <96 square inches each.
(2) >96 square inches each.
6.
 - a. Yes.
 - b. No.
7.
 - a. (1) Below ground also.
(2) Only above ground.
7.
 - b. (1) $\geq 12''$ below ground.
(2) $< 12''$ below ground
(3) $< 2''$ above ground.
(4) $\geq 2''$ above ground.

Performance Conditions

8.
 - a. \geq 8 feet.
 - b. $<$ 8 feet.
9.
 - a. (1) Yes.
(2) No.
9.
 - b. (1) $>36''$ concrete
(2) $<36''$ concrete

10. a. $<10'$ a part.
b. $>10'$ a part.
11. a. It will be buried in concrete or cable.
b. It will be attached to a bottom rail.
c. It will be buried in the ground.
d. The fabric will not be anchored.
12. a. V-shaped set of 2 overhangs.
b. Single overhand outward.
c. Single overhang inward.
13. a. Barbed tape.
b. Concertina.
c. Barbed wire.
d. Outriggers.
14. a. Fence fabric $>$ No. 11 American wire gage.
b. Chain link design with 2" mesh openings.
c. Galvanized steel.
d. Other (specify).
15. (Specify).
16. a. No.
b. Yes.
17. a. Yes.
b. No.
18. a. (1) Yes.
(2) No.
b. (1) >10 feet.
(2) 5-10 feet.
(3) <5 feet.
19. a. Yes.
b. No.
20. a. 3 or more.
b. 2.
c. 1.
21. a. Alarms.
b. Rolls of barbed tape. See question 22.
c. Other obstacles (specify).
d. Clear area.

22. a. More than 5.
b. 2 to 5.
c. 1.
d. There will be none.

23. (Specify).

Vulnerabilities

24. a. Vehicles as rams.
b. Explosives.
c. Thermal cutting tools.
d. Powered handtools.
e. Handtools.
25. a. 3 or more.
b. 2.
c. 1.

4.38 FloorsFUNCTION

The function of the floor will be to delay adversary access in order to aid detection, assessment, and response at MAAs and VAs.

CONDITIONSSite Conditions

1. At what elevation will the floor rest?
2. Are there any openings in the floor? If so, what sizes are they?

Performance Conditions

3. What will be the construction of the floor?
4. What will be the floor thickness?
5. What will be the probable penetration time(s) for the floor? (See Barrier Technology Handbook and other references.)
6. Will the floor employ redundant barriers and/or diverse materials to increase delay?
7. Will the penetration time(s) for the floor be equivalent to that for the adjacent barriers?

VulnerabilitiesAdversary Attributes

8. What tools will correspond to the above penetration time for the floor?
9. What number(s) of persons carrying out the penetrations are associated with the above penetration time(s)?

ANSWERSCONDITIONSSite Conditions

1.
 - a. Below grade.
 - b. On grade.
 - c. Above grade.

2.
 - a.
 - a. No.
 - b. Yes.

 - b.
 - a. <96 square inches each.
 - b. >96 square inches each.

Performance Conditions

3.
 - a. Standard reinforced concrete.
 - b. Expanded metal reinforced concrete.
 - c. Concrete tee beams
 - d. Metal decking on steel joists (16-18 gage).
 - e. Concrete.

4.
 - a. More than 24 inches.
 - b. 18 to 24 inches.
 - c. 12 to 18 inches.
 - d. 8 to 12 inches.
 - e. 4 to 8 inches.
 - f. 4 or less inches.

5. (Specify).

6.
 - a. Yes.
 - b. No.

7.
 - a. Yes.
 - b. No.

VulnerabilitiesAdversary Attributes

8.
 - a. Explosives.
 - b. Thermal cutting tools.
 - c. Powered handtools.
 - d. Handtools.

9.
 - a. 3 or more.
 - b. 2.
 - c. 1.

4.39 Functional Zoning

FUNCTION

The function of functional zoning will be to minimize collusion by establishing work rules which ensure that a different class of employee will control each different type of safeguard or safeguard function.

CONDITIONS

Site Conditions

Physical

1. Will the facility be configured so that the safeguard system will consist of multiple concentric zones or layers which can be functionally divided?
2. Will multiple functional zones be encountered along any path from the SNM to the protected area (PA) perimeter?

Performance Conditions

Operation

3. Will the facility zone boundaries be defined and controlled?
4. Will personnel be divided so that a different grouping of personnel will have control over each type of safeguard?
5. Will personnel be permitted to rotate duties between different groups?
6. Will other components designed to minimize collusion opportunity be employed to supplement functional zoning?
7. Will safeguards controls in adjacent zones be diversified?

ANSWERSCONDITIONSSite ConditionsPhysical

1. a. The special nuclear material (SNM) or vital equipment (VE) will be surrounded by at least three functional layers of safeguards.
- b. The SNM or VE will be surrounded by more than two functional layers of safeguards.
- c. The SNM or VE will be surrounded by two or less functional layers of safeguards.
2. a. More than three functional zones will be encountered.
- b. Three or less functional zones will be encountered.
- c. Two or less functional zones will be encountered.
- d. One functional zone will be encountered.

Performance ConditionsOperation

3. a. Zones will be fully bounded by substantial barriers and an intrusion detection system; stringent entry and exit controls will be exercised.
- b. Zone boundaries will be defined; intrusion detection sensors will be employed; and entry and exit controls will be exercised.
- c. Zone boundaries will be readily visible and the points of ingress and egress will be clearly marked; entry and exit controls will be exercised.
4. a. Each type of safeguard will be controlled by a separate grouping of personnel.
- b. The safeguards types will be divided so that more than two personnel groupings will control the various types.
- c. The safeguards types will be divided so that at least two personnel groupings will control the various types.
5. a. Rotation between the different groups will not be permitted.
- b. Limited rotation will be permitted, but a single individual will never have access to all functional zones.
- c. Rotation will be permitted on a case-by-case basis.

6.
 - a. Yes.
 - b. No.
7.
 - a. Yes, adjacent zones have diversified safeguards.
 - b. Yes, there is only 1 zone, but safeguards are diversified in this zone.
 - c. No, adjacent zones do not have diversified safeguards.

4.40 Gates and Associated HardwareFUNCTION

The function of the gate will be to delay unauthorized entry or exit at the protected area (PA) to aid detection, assessment, and response.

CONDITIONSSite Conditions

1. What is the nature of the surface beneath the gate?
2. Will erosion about the gate be a problem?
3. Will corrosion of the gate be a problem?

Performance Conditions

4. Who will have control over the gate's function?
5. How will the gate be locked?
6. Will the gate hardware, i.e., hinges, locks, etc., be as resistant as the gate?
7. What is the size of the gate(s)?
8. Will more than one gate be in sequence?
9. What type of gate is used?
10. What is the material of construction for the gate?
11.
 - a. Will any hardening feature be incorporated into or in front of the gate?
 - b. If so, what kind?
12. Will the gate be alarmed?
13. Will the gate be clearly lighted?
14. Will the gate be in full view for assessment 24 hours a day?
15. What will be the probable penetration time for the gate? (See Barrier Technology Handbook and other references.)
16. Will the penetration time(s) of the gate be equivalent to that of adjacent fences?

17. What will be the total penetration time for each sequence of gates? (See Barrier Technology Handbook and other references.)

Vulnerabilities

Adversary Attributes

18. What class(es) of tools correspond to the above penetration time(s) for the gate(s)?
19. What number(s) of persons carrying out the penetrations are associated with the above penetration time(s)?

Related Questionnaires

20. For evaluation completeness, please answer the following interrelated effectiveness test:
- a. Locks (Keyed/Keyless).

ANSWERSCONDITIONSSite Conditions

1.
 - a. Concrete.
 - b. Asphalt.
 - c. Firm ground.
 - d. Soft ground.
 - e. Other.
2.
 - a. No serious erosion is anticipated about the gate.
 - b. The area about the gate will be well maintained.
 - c. No maintenance is planned.
3.
 - a. Due to construction techniques, corrosion is not expected.
 - b. Due to a preventive maintenance program, corrosion will not be a problem.
 - c. Repairs will be made as necessary.

Performance Conditions

4.
 - a. A member of the security force.
 - b. Personnel/vehicles using the gate.
5.
 - a. Padlock.
 - b. Chain.
 - c. Other (specify).
6.
 - a. Yes.
 - b. No.
7.
 - a. 4' x 8'
 - b. 8' x 13'
 - c. Other (Specify).
8.
 - a. Yes, three or more.
 - b. Yes, two.
 - c. There will be one gate only.
9.
 - a. Swing gate.
 - b. Sliding gate.
 - c. Lift gate.
 - d. Turnstile gate.
10.
 - a. Gate fence fabric \geq No. 11 American wire gage.
 - b. Chain link design with 2" mesh openings.
 - c. Galvanized steel frame.
 - d. 1.9" metal pipe frame.
 - e. Other (Specify).

11. a. (1) Yes.
(2) No.
11. b. (1) Entrance orientation.
(2) Interlocking double gate.
(3) Reinforced hinges.
(4) Reinforced bars.
(5) Other (specify).
12. a. Yes.
b. No.
13. a. Yes.
b. No.
14. a. Yes.
b. No, just at night.
c. No, just during day.
d. No.
15. (Specify).
16. Yes.
No.
17. (Specify).

Vulnerabilities

Adversary Attributes

18. a. Vehicles as rams.
b. Explosives.
c. Thermal cutting tools.
d. Powered handtools.
e. Handtools.
19. a. 3 or more.
b. 2.
c. 1.

4.41 Guard Force Personal Equipment

FUNCTION

The function of the guard force personal equipment will be to allow for a more effective response to a perceived threat.

CONDITIONS

Performance Conditions

Operation

1. Will fixed site guards and transportation armed escorts be provided with equipment necessary for assigned tasks and duties described in the physical security and contingency plans (re: 10 CFR 73, Appendix B, Section V)?
2. Will the personal equipment be readily available to personnel requiring such equipment for the proper execution of their job assignments?
3. Will the licensee's training and qualification plan provide security personnel with the training necessary to properly use the equipment issued for normal operations and contingency operations?
4. Will guard force members be equipped with duress alarms and trained in the use of duress codes?
5. Will guard force members be equipped with personal communication devices in order to be in continuous communication with the central alarm station?

Reliability

6. Will there be a program for regular testing and maintenance of personal equipment?
7. What procedure will be followed for verifying that personal equipment is available and operational?
8. Will the logistics for personal equipment be considered (re: 10 CFR 73, Supplement C)?

Vulnerabilities

Component Protection

9. Will personal equipment be adequately protected against unauthorized removal from designated storage area(s)?

Related Questionnaires

10. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Duress Alarms.
 - b. Portable Radio.

ANSWERSCONDITIONSPerformance ConditionsOperation

1. a. Yes, personnel are equipped or have available such equipment.
b. No, but documentation supporting exceptions to the requirements of 10 CFR 73, Appendix B, Section V, will be provided.
2. a. Personal equipment will be kept in various storage areas conveniently located near alarm stations and guard patrol points; weapon and personal equipment storage areas will be collocated.
b. Personal equipment will be kept in a storage area located near the weapon storage area.
c. Personal equipment will be kept in a storage area in a location different from the weapon storage area.
3. a. Yes.
b. No, but documentation supporting this exception will be provided.
4. a. Yes.
b. No.
5. a. Yes.
b. No.

Reliability

6. a. Yes, for regular testing and maintenance.
b. For maintenance only.
c. No.
7. a. The guard to whom equipment is assigned will verify that it is available and operational once during each shift.
b. Personnel who have been assigned to storage area(s) will be responsible for verifying, at least once a week, that personal equipment is available and operational.
c. Personal equipment will be checked only when it is needed.

8. Yes, personal equipment will be kept:
 - a. Easily accessible, in good working order, and in sufficient supply.
 - b. In good working order and in sufficient supply.
 - c. Easily accessible and in good working order.

Vulnerabilities

Component Protection

9.
 - a. Storage area(s) will be manned and will be protected also by the detection system.
 - b. Storage area(s) will be protected by the detection system.
 - c. The general area around the storage area(s) will be protected by the detection system.

4.42 Guard Force Qualification

FUNCTION

The function of the guard force qualification requirements will be to ensure a high-quality guard force which will be capable of adequately defending a facility against a specified threat.

CONDITIONS

Site Conditions

1. What members of the security organization comprise the guard force?

Performance Conditions

2. Have all members of the guard force passed a physical examination?
3. Is the guard force qualified with respect to 10 CFR 73, App. B, Sect. I.B.1(b)?
4. Will the emotional stability of guard force members be monitored in the job environment?
5. Is the licensee physical exercise program described and documented?
6. Is the mental and physical fitness of the guard force documented?
7. Is the guard force physically requalified at least every 12 months?
8. Has the licensee training and qualification plan for security-related job tasks and duties been prepared?
9. Is each member of the guard force requalified at least every 12 months to perform his tasks and duties?
10. Is the guard force qualified in accordance with the licensee's weapons training program and prescribed standards (re: 10 CFR 73, App. B. III and IV)?
11. Are the results of the guard force weapons qualification documented?
12. Is each member of the guard force weapons-requalified at least every 12 months?

ANSWERSCONDITIONSSite Conditions

1. a. Armed response persons.
b. Guards.
c. Watchmen.
d. Other security personnel.
e. All of the above.

Performance Conditions

2. a. Yes.
b. No.
3. a. Yes.
b. No.
4. a. Emotional stability will be monitored by a responsible supervisor. Any instability will be verified by a licensed, trained person.
b. Emotional stability will be monitored only if the supervisor is alerted by the employee's co-workers of signs of instability. Any instability will be verified by a licensed, trained person.
c. Emotion stability will be monitored by a licensed, trained person if extreme signs of instability are reported.
5. a. Yes.
b. No.
6. a. Yes.
b. No.
7. a. Yes.
b. No.
8. a. Yes.
b. No.
9. a. Yes.
b. No.
10. a. Yes.
b. No.
11. a. Yes.
b. No.
12. a. Yes.
b. No.

4.43 Guard Patrols/InterventionFUNCTION

The functions of this procedure will be to provide detection of intrusions, unauthorized placement and movement of SNM within MAAs, and other unauthorized activities and conditions in the PA, MAAs, and VAs; to assess the perceived threat; to communicate with other guard patrols as well as the CAS and SAS, and to respond to the perceived threat by delaying the adversary until further assistance is provided or, if necessary, intervening to prevent theft of SNM and/or sabotage of vital components.

CONDITIONSDetection (Surveillance)

1. Will guard patrols include security tours which consist of inspections of physical security hardware, e.g., gates, fences, locks, and clear areas?
2. Will guards be sufficiently familiar with the physical security hardware to recognize any faults?
3. Will guard patrols include surveillance of the isolation zone, PA, MAAs, and VAs to detect unauthorized activities and conditions at the facility and unauthorized placement and movement of SNM?
4. Will guards be sufficiently familiar with authorized activities and conditions at the facility and authorized placement and movement of SNM to detect potential or real threat situations?
5. What factors will be considered in establishing schedules for guard patrols?
6. How often will areas protected by sensors be patrolled?
7. Will guard patrols include unscheduled routes, variable routes, and backtracking?

Assessment

8. Will guards be trained to recognize the various types of alarms, e.g., intrusion detection, duress, criticality, and other emergency alarms?
9. Will guards have a thorough understanding of the procedures for assessing potential as well as real threat situations?

Communication

10. How often will guards on patrol be in communication with each other?
11. How often will guards on patrol be in communication with security personnel in the CAS/SAS?
12. Will guards on patrol be thoroughly familiar with personal duress codes and signals to ensure communication with other guards on patrol or security personnel in the CAS/SAS?
13. Have criteria been established to determine at what point LLEA are called?

Delay and Response

14. Will guards be required to intervene between VAs and MAAs and any adversary attempt for purposes of radiological sabotage or theft of SNM?
15. Will guards be instructed to intercept any person exiting with SNM?
16. Will guards be instructed to prevent or delay radiological sabotage or theft of SNM by applying a sufficient degree of force to counter the degree of force directed at them, including the use of deadly force when there is reasonable belief that it is necessary in self-defense or in the defense of others?
17. Will at least five guards be immediately available at the facility to fulfill response requirements if necessary?
18. Does the licensee safeguards contingency plan address training, equipping, and qualification of these security personnel who participate in guard patrols/intervention.

ANSWERSCONDITIONSDetection (Surveillance)

1. a. Yes.
b. No.
2. a. Yes.
b. No.
3. a. Yes.
b. No.
4. a. Yes.
b. No.
5. a. (1) The type of shift, e.g., normal workday, weekend, and
(2) The expected delay provided by physical security hardware, and
(3) The existence (or lack) of other physical security detection equipment in the area to be patrolled.
b. The same as (1) and (3) above.
c. Only (1) above will be considered.
6. a. Once every hour.
b. Once every 2 to 4 hours.
c. Less frequently than once every 4 hours.
7. a. Yes.
b. No.

Assessment

8. a. Yes.
b. No.
9. a. Yes.
b. No.

Communication

10. a. Once every 15 minutes.
b. Every 15 to 30 minutes.
c. Less often than every 30 minutes.

11. a. Once every 30 minutes.
b. Every 30 to 60 minutes.
c. Less often than every hour.
12. a. Yes.
b. No.
13. a. Yes.
b. No.

Delay and Response

14. a. Yes.
b. No.
15. a. Yes.
b. No.
16. a. Yes.
b. No.
17. a. Yes.
b. No.
18. a. Yes.
b. No.

4.44 Guard Post AssignmentFUNCTION

The function of this procedure will be to assign duty posts in such a manner that an outsider cannot predict specific guard assignments for particular dates.

CONDITIONS

1. Will guard assignments be randomized?
2. How will guard assignments within each shift be randomized?
3. How often will guard assignments be changed?
4. How far in advance of duty will a guard know what his specific assignment will be?
5. Who will be allowed advance knowledge of specific guard assignments?
6. When reserve guards are used, will their specific assignments vary?
7. When contract guards are used, will knowledge of guard assignments be controlled?

ANSWERSCONDITIONS

1.
 - a. Yes, guard assignments will be randomized within all sections of the guard force, patrol, access control, command post, etc.
 - b. Yes, guard assignments will be randomized within some sections of the guard force.
 - c. No, guard assignments will not be randomized.
2. Guard assignments will:
 - a. Be randomized by computer.
 - b. Be randomized manually by security coordinating personnel.
 - c. Be randomized manually by each section supervisor.
 - d. Not be randomized.
3. Guard assignments will be changed:
 - a. At least twice a day.
 - b. Daily.
 - c. Weekly or less often.
4. A guard will have:
 - a. No advance notice (specific assignment will be made at the beginning of each shift).
 - b. One day's notice.
 - c. More than one day's notice.
5.
 - a. No one will have advance knowledge of specific assignments, they will be made randomly at the beginning of each shift.
 - b. Only supervisory guard personnel will have advance knowledge of assignments.
 - c. Each guard will have advance knowledge of his assignment.
 - d. Assignments will be posted and available to anyone interested.
6. Reserve guard assignments will:
 - a. Be varied once each shift.
 - b. Be varied each time a "tour of duty" is begun.
 - c. Not be varied.
7. Contract guard assignments will be controlled:
 - a. Same as for other guards.
 - b. Other way (specify).

4.45 Hardwire Video Systems

FUNCTION

The function of the hardwire video will be to provide a means to transmit information from a remote video camera to the local video monitor.

CONDITIONS

Environmental Conditions

1. What means of lightning protection will be provided for the video cable?
2. If electromagnetic interference (EMI) sources are expected to be nearby, what will be done to minimize their effect on signal transmission?
3. Will all exterior connections be sealed from moisture?
4. Will messenger wires be used to support aerial cable runs?

Performance Conditions

Operation

5. Will impedance mismatching between video cable and equipment be minimized to avoid ghost images on monitors?
6. If excessive signal losses due to impedance matching transformers, isolation transformers, and/or long cable length cause unsatisfactory monitor pictures, will video equalizers and/or line amplifiers be utilized?

Maintenance

7. Will preventive maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?

Reliability

8. In the event of normal power failure (accidental or intentional), how much time will be required to restore video cable operation?

Vulnerabilities

9. Will the video transmission system be completely contained within the protected area?

Related Questionnaires

10. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System.
 - b. Emergency Generator Systems.
 - c. Equipment Checks/Maintenance.
 - d. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSEnvironmental Conditions

1. a. (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings, and concrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and
 - (2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel, which in turn will be bonded to the structure (Faraday type) shield and a good ground, and
 - (3) At the entry panel, primary surge arresters, e.g., gas-filled spark gaps, will be connected between each cable conductor and ground, and
 - (4) If solid state electronic or other equipment sensitive to short time overvoltage is to be protected, then secondary surge protection, e.g., silicon junction avalanche devices or metal oxide varistors, will be connected at the equipment between each cable conductor and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
- b. All of the above except (1), plus properly installed and grounded lightning rods.
- c. Only (2) and (3) or, if sensitive equipment, only (2) and (4).
- d. Only (2).
2. a. Either EMI is not expected to be a problem, or shielded, balanced line transmission employing balanced line isolation transformers at each end of the line will be used.
- b. Shielded, unbalanced line with an isolation transformer at one end of the line will be used.
- c. Shielded, unbalanced line will be used.
3. a. Yes.
- b. No.
4. a. Yes, or messenger wire is not needed (e.g., cable will be installed in underground conduit).
- b. No.

5. a. Yes.
b. No.
6. a. Yes, or signal losses will not be excessive.
b. No.

Maintenance

7. a. Yes.
b. No.

Reliability

8. a. Less than 5 seconds, or will not be required for operation.
b. From 5 seconds to 1 minute.
c. From 1 to 5 minutes.
d. More than 5 minutes.

Vulnerabilities

9. a. Yes.
b. No.

4.46 Infrared Beam Systems, Exterior

FUNCTION

The function of the exterior IR beam system will be to sense boundary penetrations at the fence or isolation zone.

CONDITIONS

Site Conditions

Physical

1. Will trees, shrubs, and weeds be adequately removed from the perimeter zone to ensure an immunity to wind-induced nuisance alarms?
2. Will the grade of the terrain under this system be level enough to prevent intruders from crawling under the lowest beam?

Environmental Conditions

3. If environmental conditions, e.g., rain, snow, or fog, which could adversely affect the infrared system are expected to occur at least 5 percent of the time, what provisions will be made to ensure detection under these conditions?
4. Will the environmental specifications of the infrared sensors meet the expected extremes of the environment at the site?
5. If the infrared system will be adversely affected by manmade interferences, e.g., radio transmissions or high-voltage power lines, what provisions will be made to ensure detection under these conditions?
6. What means of lightning protection will be provided for this equipment?
7. Will the sensor be located so that the infrared receivers will not be influenced by other infrared sources such as the sun or bright lights?

Performance Conditions

Installation

8. How will the maximum separation between the receiver and transmitter elements of any infrared sensor segment be determined?

9. Will the infrared sensor elements, infrared transmitters, photo-detectors, and appropriate lenses be mounted at heights which maximize the system's ability to detect specific types of intruders?
10. Will the infrared sensors be camouflaged?
11. Will the IR sensors be rigidly mounted?
12. Will the system be single beam or multiple beam?

Maintenance

13. Will preventive maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?

Reliability

14. How will it be determined if the infrared sensor is operating?
15. If the sensor has self-test capability, what will be the test frequency?
16. How often will the infrared sensor be subjected to a full operational test including verification that stomach-crawling intruders moving parallel to the beam can be detected?
17. What techniques will be employed to extend the lifetime of the IR source?

Vulnerabilities

Adversary Attributes

18. When infrared sensors cover a length longer than one zone, or go around corners, what provisions will be made to ensure that no vulnerable areas exist at these regions?
19. How will the sensor elements be protected from adversary defeat?
20. Will the infrared receiver be subject to capture by an external infrared source?
21. Can the zone end housing be used as a support to assist jumping over the detection zone?

Related Questionnaires

22. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System.
 - b. Emergency Generator Systems.
 - c. Equipment Checks/Maintenance.
 - d. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite ConditionsPhysical

1. a. Yes.
b. No.
2. a. Yes.
b. Grade will not be level but areas will be filled as necessary so that a stomach-crawling intruder moving parallel to the beam cannot defeat the system at any point along the system's range.
c. No.

Environmental Conditions

3. a. Environmental conditions which could adversely affect the sensor are not expected to be a problem, or another sensor will be used to detect intrusion.
b. No provisions will be made.
4. a. Yes.
b. No, but the system will be protected as required.
c. No.
5. a. No manmade interferences are expected to occur, or the sensor will be hardened against these interferences, or an alternative means of detection will be used.
b. No provisions will be made.
6. a. (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings, and concrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and
(2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel, which in turn will be bonded to the structure (Faraday type) shield and a good ground, and
(3) At the entry panel, primary surge arresters, e.g., gas-filled spark gaps, will be connected between each cable conductor and ground, and

- (4) If solid state electronic or other equipment sensitive to short-time overvoltage is to be protected, then secondary surge protection, e.g., silicon junction avalanche devices or metal oxide varistors, will be connected at the equipment between each cable conductor and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
- b. All of the above except (1), plus properly installed and grounded lightning rods.
- c. Only (2) and (3) or, if sensitive equipment, only (2) and (4).
- d. Only (2).
7. a. The sensors will be located and/or protected so that other IR sources will not influence them.
- b. The sensors will be located and/or protected so that most other IR sources will not influence them.
- c. Nothing will be done.

Performance Conditions

Installation

8. a. While not exceeding manufacturer's specifications, all anticipated environments will be considered in determining the range.
- b. While not exceeding manufacturer's specifications, some of the more common environments will be considered in determining the range.
- c. The range on the manufacturer's data sheet will be used.
9. a. Yes, the infrared transmitter/receiver stack will be mounted close enough to the ground so that a stomach-crawling intruder cannot crawl under it, and it will be high enough so that it cannot be easily jumped over (this may require stacking units to achieve height greater than available ladder sizes, etc.).
- b. The sensor will detect only upright walkers.
- c. The sensors will be mounted at a height (usually 120 cm or more separation between transmitter and receiver) for detection of automobiles or other equally large objects.
10. a. Yes, since the IR sources are small, they may be easily camouflaged.

- b. Possibly, although the IR housings are rather large and it would be difficult to camouflage them.
 - c. No.
11. a. Yes, the sensors will be rigidly mounted to prevent misalignment of the narrow beam.
- b. The sensor mountings will not be particularly rigid, but it has been determined that the environmental conditions are such that the sensors will be fairly stable.
 - c. No.
12. a. Multiple, interlacing beams.
- b. Single beam.

Maintenance

13. a. Yes.
- b. No.

Reliability

14. a. By automatic self-test.
- b. By manual self-test.
 - c. By daily walk procedures.
 - d. By walk tests of intervals longer than one week.
15. a. Less than 30-second intervals.
- b. From 30- to 60-second intervals.
 - c. From 1- to 5-minute intervals.
 - d. Once per shift.
 - e. Less than daily intervals.
 - f. At the beginning and end of any period that it is used, but no less frequently than once every seven days.
16. a. Every few months, or more often if repairs or changes have been made.
- b. Once a year.
 - c. Never.
17. a. Pulsed IR beams will be used to reduce the IR source's power consumption and to enhance the source's reliability and lifetime.
- b. High quality parts will be used.
 - c. None.

VulnerabilitiesAdversary Attributes

18.
 - a. When an infrared sensor is employed to cover lengths longer than one zone, or to go around corners, overlap technique or other sensors are used to ensure that no vulnerable region exists.
 - b. The zone-end structures will be butted end-to-end to eliminate vulnerable areas and care will be taken to minimize the possibility of an intruder's using the end zone structures to defeat the sensor.
 - c. None.
19.
 - a. By pulsed infrared transmitters.
 - b. By multiple transmitters and receivers stacked in each end zone structure.
 - c. By a built-in proximity sensor alarm if someone touches the end zone structure.
 - d. By a pressure sensitive switch activation if any force is exerted on the end zone structure.
 - e. By conventional tamper switches used inside the end zone structure.
20.
 - a. Yes.
 - b. No.
21.
 - a. It would be very difficult to use the end zone housings to assist jumping over the detection zone because these housings are protected by other sensors, self-contained proximity sensors, and/or pressure sensitive switches.
 - b. It might be difficult to use the end zone housings to assist jumping over the detection zone because of the vertical height of these housings.
 - c. It is likely that the end zone housings could be used to assist jumping over the detection zone.

4.47 Interface Between Alarm Station and Sensors

- Individual Hardwire Alarms
- Multiplexed Hardwire Alarms
- Hardwire Command Signals

FUNCTION

The function of the sensor alarm interfaces will be to process and transmit sensor output to the alarm station(s).

CONDITIONS

Environmental Conditions

1. How will the transmission system be protected from lightning damage?
2. Are transmission losses resulting from sporadic electrical interferences expected?
3. Will hardwire transmission lines be encased in conduit?

Performance Conditions

Operation

4. What will be the expected time between the initiation of a sensor signal and the display activation?
5. How long must the sensor stimulus be present to ensure signal transmission?
6. What will happen when simultaneous alarms occur?

Diversity and Redundancy

7. How many locations in the transmission system will be used as backup annunciators?
8. What portion of the system will be disabled if a single transmission line is cut?

Related Questionnaires

9. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System.
 - b. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSEnvironmental ConditionsNatural

1. a. (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings and concrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and
 - (2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel which, in turn, will be bonded to the structure shield (Faraday type) and a good ground, and
 - (3) At the entry panel, primary surge arresters (e.g., gas-filled spark gaps) will be connected between each cable conductor and ground, and
 - (4) If solid state electronic or other equipment sensitive to short time overvoltage is to be protected, then secondary surge protection (e.g., silicon junction avalanche devices or metal oxide varistors) will be connected at the equipment between each cable conductor and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
 - b. All of the above except (1), plus properly installed and grounded lightning rods.
 - c. Only (2) and (3) of the above or, if sensitive equipment, only (2) and (4).
 - d. Only (2) of the above.
2. a. No.
b. Yes.
3. a. Yes, where applicable.
b. No, does not apply.
c. No.

Performance ConditionsOperation

4.
 - a. Less than 1 second.
 - b. From 1 to 2 seconds.
 - c. From 2 to 5 seconds.
 - d. From 5 to 10 seconds.
 - e. From 10 seconds to 1 minute.
 - f. More than 1 minute.
5.
 - a. Less than 0.1 second.
 - b. From 0.1 to 0.5 seconds.
 - c. From 0.5 to 1 second.
 - d. From 1 to 10 seconds.
 - e. More than 10 seconds.
6.
 - a. All alarms will be stored for sequential prioritized evaluation.
 - b. At least one alarm will be retained.
 - c. All alarms will be lost.

Diversity and Redundancy

7.
 - a. Two or more.
 - b. One.
 - c. None.
8.
 - a. None.
 - b. Less than 10 percent.
 - c. From 10 to 25 percent.
 - d. From 25 to 50 percent.
 - e. More than 50 percent.

4.48 Isolation ZonesFUNCTION

The function of the isolation zone will be to provide an area adjacent to a physical barrier which will be clear of all objects which could conceal or shield an individual and which is monitored to detect the presence of individuals or vehicles within that area.

CONDITIONSSite Conditions

1. If parking facilities or facility buildings exist outside the PA, are they outside the isolation zone?
2. What level of routine activity is expected in the isolation zone?
3. What is the minimum distance that the isolation zone extends outward from the physical barrier at the perimeter of the protected area?
4. What is the minimum distance that the isolation zone extends inward from the physical barrier at the perimeter of the protected area?
5. Will the isolation zone be kept clear of vegetation which might obstruct a view of the area?
6. What provisions will be made to ensure that detection capability in the isolation zone is not impaired by blind spots due to hilly terrain?

Performance Conditions

7. How will presence of personnel or vehicles in the isolation zone be detected?
8. What level of illumination will be used in the isolation zone for monitoring or checking?
9. To facilitate initial response to penetration, how will the isolation zone be observed?

Related Questionnaires

10. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System.
 - b. Emergency Generator Systems.
 - c. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.
2. a. None expected.
b. Occasional personnel only.
c. Occasional personnel and vehicles.
d. Frequent personnel or vehicles.
3. a. > 50 ft.
b. < 50 ft. but ≥ 10 ft.
c. < 10 ft.
4. a. > 50 ft.
b. < 50 ft. but ≥ 10 ft.
c. < 10 ft.
5. a. Vegetation will not be a problem, or all vegetation will be permanently cleared from the area by means of soil sterilant, asphalt, cement, etc.
b. Yes, vegetation will be trimmed and cut regularly.
c. No, no attempt will be made to keep the area clear of vegetation.
6. a. Hilly terrain in the isolation zone will not be a problem, or the area will be graded.
b. Blind spots due to hilly terrain will be covered by using sensors to detect the presence of individuals or vehicles in the area.
c. None.
7. a. By continuous monitoring.
b. By periodic checking.
8. a. > 0.2 foot candles measured horizontally at ground level.
b. $= 0.2$ foot candles measured horizontally at ground level.
9. a. By use of CCTV.
b. Visually from within a nearby alarm station.
c. Visually from within the isolation zone.

4.49 K-9s, Use of Package SearchFUNCTION

The function of the K9 package search will be to use dogs to detect introduction of explosives in packages at PA, MAA, or VA entry control points.

CONDITIONSSite Conditions

1. Will a remote area be provided for the search?
2. Will the search areas be checked periodically to ensure the area is "clean" of any materials that may confuse the animal?
3. Will the search area be clear of odors, such as vapors from chemical plants, which may impair the efficiency of the animal?
4. Will the packages be placed and turned so that the animal will have free access to all their sides?

Performance ConditionsOperation

5. Will only one handler be assigned to one animal?
6. Will scented toiletry products be used sparingly by the handler, to minimize possible desensitization of the animal?
7. Will the length of the working shift be regulated to coincide with the initial training of the dog?
8. Will a "working hour" for the dog be defined as 40 minutes of search and 20 minutes of play?
9. Will a thorough examination be made on every search?
10. In case of a "find" or a "false alarm," will the search be continued for additional explosives secreted in other packages?
11. If a "find" is made, to whom will the alarm be transmitted?
12. Will the animal be rewarded for a successful search involving no find?
13. If packages are openable, will they be opened for the search?

14. If packages are not openable, will they be compressed slightly in some way to cause the displacement of some vapors for the animal to smell?

Maintenance

15. Will the dog be kenneled away from odors that may impair the dog's sense of smell?
16. Will the dog's training be updated?
17. Will the dog and his handler be recertified on a regular basis?
18. Will a supervisor of all the teams be assigned to verify and record information pertaining to team performance, retraining schedules, recertification schedules, etc.?

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No, but a separate area will be provided.
c. No.
2. a. Yes, daily.
b. Yes, weekly.
c. Yes, monthly.
3. a. Yes.
b. No.
4. a. Yes.
b. No.

Performance ConditionsOperation

5. a. Yes.
b. One handler will work with two animals alternately.
c. Several handlers will work with several animals.
6. a. Yes, a strong effort will be made to avoid these "scents."
b. Yes, some effort will be made.
c. No.
7. a. Yes.
b. No.
8. a. Yes.
b. No.
9. a. Two passes will be made on each search.
b. One pass will be made on each search.
c. One hurried pass will be made on each search.
10. a. The package which causes a "find" or "false alarm" will be removed, and the search will be continued.
b. A "find" or "false alarm" will be noted and search continued.

11.
 - a. The alarm will be transmitted to the security operations center.
 - b. Local law enforcement agencies will be directly contacted.
 - c. No alarm will be transmitted.
12.
 - a. Yes, a play time will be held with verbal praise and a reward given.
 - b. Yes, a play time will be held with verbal praise given.
 - c. No. Neither play time nor reward will be given.
13.
 - a. Yes.
 - b. No.
14.
 - a. Yes.
 - b. No.

Maintenance

15.
 - a. Yes, the dog will be kept in a clean kennel away from fumes that could be harmful to his sense of smell.
 - b. No special effort will be made to locate the kennel in a special environment.
16.
 - a. Yes, each dog will be given 4 hours of retraining per week in the finding of explosives which he has been trained to locate.
 - b. Yes, the dog's training will be updated.
 - c. No retraining will be given.
17.
 - a. Yes, the team will be recertified every 6 months.
 - b. Yes, the team will be recertified every 8 months.
 - c. Yes, the team will be recertified every 12 months.
 - d. No.
18.
 - a. Yes.
 - b. No.

4.50 K-9s, Use of Vehicle SearchFUNCTION

The function of the K9 vehicle search will be to use dogs to detect introduction of explosives in vehicles at PA entry control points.

CONDITIONSSite Conditions

1. Will a material transfer dock be utilized wherever possible in order to limit vehicle access into the protected area?
2. Will a remote area within the protected perimeter be provided for the search?
3. Will the remote area be searched periodically to ensure the area is "clean" of materials that might confuse the animal?
4. Will the remote area be clear of odors (e.g., vapors from chemical plants or automobile exhaust) which might impair the efficiency of the animal?
5. Will the vehicle engine be turned off during the search?
6. Will the driver be searched for contraband and then removed from the area before the vehicle search?
7. Will lifts or ramps be provided so that the animal can access all areas of the vehicle?

Performance ConditionsOperation

8. Will only one handler be assigned to one animal?
9. Will scented toiletry products be used sparingly by the handler to minimize possible desensitization of the animal?
10. Will the length of the working shift be regulated to coincide with that of the initial training of the dog?
11. Will a "working hour" for the dog be defined as 40 minutes for the search and 20 minutes for play?

12. How thorough an examination will be made during each search?
13. In case of a "find" or a "false alarm," will the search be continued for additional explosives secreted in the vehicle?
14. If a "find" is made, to whom will the alarm be transmitted?
15. During the initial training of a dog, will a "graded" reward system be used?
16. Will the reward system initially used in training be strictly adhered to in operation?
17. Will all possible areas available for secreting explosives be searched, e.g., the undercarriage, the spare tire racks, the wheel wells, the hubcaps, the toolboxes?
18. Will the area under the hood, i.e., the engine area, be thoroughly searched?
19. Will the cab area be searched, e.g., under the seats, behind the seats, under the dash, above the sun visors?
20. Will the animal be prepared to search as soon as closed vehicles are opened?
21. Will the doors themselves be checked?
22. Will packages and other articles carried in the vehicle be searched thoroughly?
23. Will the handler be observant for fine wires in areas where wire is not usually found, e.g., tires, shift knob, steering wheel?
24. Will the handler check in unusual places where the odor of the explosives will be obscured from the dog's sense of smell, e.g., in the gas tank?
25. Will the handler be trained in what to look for to find vapor-tight packages and containers in areas such as the inside of wheel wells or on the undercarriage?

Maintenance

26. Will the dog be kenneled away from odors that may impair his sense of smell?
27. Will the dog's training be updated?
28. Will the dog and his handler be recertified on a regular basis?
29. Will a supervisor of all the teams be assigned to verify and record information pertaining to team performance, retraining schedules, recertification schedules, etc.?

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.
2. a. Yes.
b. No, but a separate area will be provided.
c. No.
3. a. Yes, daily.
b. Yes, weekly.
c. Yes, monthly.
4. a. Yes.
b. No.
5. a. Yes.
h. No.
6. a. Yes.
b. The driver will be searched, but not removed.
c. No, the driver will not be searched for contraband.
7. a. Yes.
b. No.

Performance ConditionsOperation

8. a. Yes.
b. One handler will work with two animals alternately.
c. Several handlers will work with several animals.
9. a. Yes, a strong effort will be made to minimize the use of such "scents."
b. Yes, some attempt will be made.
c. No.
10. a. Yes.
b. No.
11. a. Yes.
b. No.
12. a. Two passes will be made during each search.
b. One pass will be made during each search.
c. One hurried pass will be made during each search.

13. a. A "find" or "false alarm" will be removed and the search continued.
b. A "find" or "false alarm" will be noted and the search continued.
14. a. The CAS and SAS.
b. Local law enforcement agencies or an explosives ordnance team will be directly contacted.
c. No alarm will be transmitted.
15. a. Yes, the best reward will be given for a "find," an intermediate reward will be given for a successful search, and no reward will be given for a poor search.
b. No.
16. a. Yes.
b. No.
17. a. Yes.
b. A random search of possible areas will be made.
c. No.
18. a. Yes, from above and below.
b. Only from above.
c. Not at all.
19. a. Yes.
b. No.
20. a. Yes, the animal will be prepared to start search immediately to ensure sampling of accumulated vapors.
b. No, doors, etc., will be opened as soon as the vehicle enters the area, and the search will be random.
21. a. Yes, the doors will be searched to ensure that no explosives are hidden there.
b. No.
22. a. Yes, each article will be searched individually.
b. Packages will not be searched individually.
23. a. Yes, the handler will be trained in what to look for to detect explosives.
b. No, the handler will rely on the dog only.

24. a. Yes, gas caps will be removed to ensure no explosives are suspended from the cap.
b. No.
25. a. Yes.
b. No.

Maintenance

26. a. Yes, the dog will be kept in a clean kennel away from fumes that could be harmful to his sense of smell.
b. No special effort will be made to locate the kennel in a special environment.
27. a. Yes, each dog will be given 4 hours of retraining per week in the finding of explosives which he has been trained to locate.
b. Yes, the dog's training will be updated.
c. No, no retraining will be planned.
28. a. Yes, the team will be recertified every 6 months.
b. Yes, the team will be recertified every 8 months.
c. Yes, the team will be recertified every 12 months.
d. No.
29. a. Yes.
b. No.

4.51 Local Audible/Visible Alarms

FUNCTION

The function of the local audible/visible alarms will be to locally annunciate an alarm which indicates unauthorized entry or exit into the PA/MAA/VA or a condition which may be hazardous to personnel working in the area.

CONDITIONS

Performance Conditions

Operation

1. Will the alarm be installed so that it is visible/audible to all personnel in the area, i.e., no obstructions exist?
2. If the alarm is audible, what will be its intensity in dB at a distance of 10 feet from the alarm?
3. If the alarm is visible, what means of alert will be used?
4. Will the alarm be monitored by the CAS/SAS?
5. Will facility personnel be instructed in proper procedures to follow in the event of an alarm?

Maintenance

6. How often will the alarm be tested?

Vulnerabilities

7. If the alarm will be used in conjunction with an SNM monitor, who will have access to the sensitivity adjustment on the monitor?
8. If the alarm will be used in conjunction with a door monitor, how far can the door be opened without activating the alarm?
9. How will the alarm be reset after being activated?

Related Questionnaires

10. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System.
 - b. Emergency Checks/Maintenance.
 - c. Emergency Generator Systems.
 - d. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSPerformance ConditionsOperation

1.
 - a. The alarm will be completely audible/visible to all personnel in the area.
 - b. The alarm will be partially audible/visible to some personnel in the area. These personnel will sometimes have to depend on others for notification.
 - c. The alarm will be totally obstructed for some personnel in the area. These personnel will have to depend entirely on others for notification.
2.
 - a. At least 15 dB above the ambient noise level.
 - b. 10 to 15 dB above the ambient noise level.
 - c. Less than 10 dB above the ambient noise level.
3.
 - a. A very bright, flashing strobe light.
 - b. A normal-intensity flashing light.
 - c. A normal-intensity nonflashing light.
4.
 - a. Yes, both CAS and SAS.
 - b. Only the CAS.
 - c. No.
5.
 - a. (1) Personnel will be briefed on proper procedures; and (2) Instructions will be posted in a convenient location.
 - b. Either (1) or (2) above.
 - c. Personnel will not be instructed.

Maintenance

6.
 - a. At least once during each work shift.
 - b. At least weekly.

Vulnerabilities

7.
 - a. Either the alarm will not be used in conjunction with an SNM monitor or access to sensitivity adjustments will require a key or similar mechanism which will be under the control of the security supervisor or equivalent.

- b. Access to sensitivity adjustments will be limited because of placement and location; it will be very difficult for a motivated individual to gain access to sensitivity adjustments.
 - c. Access to sensitivity adjustments will be limited because of placement; however, a motivated person might be able to gain access.
 - d. Access to sensitivity adjustments will not be limited.
- 8.
- a. Either the alarm will not be used in conjunction with a door monitor, or the door will not be able to be opened without causing an alarm.
 - b. The door may be able to be slightly opened, but not enough to pass a small object through.
 - c. The door may be able to be slightly opened; it may be possible to pass a small object through.
- 9.
- a. The alarm will be reset only by a guard or authorized individual; verification with the CAS/SAS will be required.
 - b. The alarm will be reset only by a guard or authorized individual.
 - c. Resetting the alarm will be a simple procedure; the nearest employee will do it.

4.52 Locks (Key Locks, Keyless Locks)FUNCTION

The function of the locks will be to delay penetration into the PA, MAAs, VAs, vault or vault type rooms, containers for SNM vital equipment, keys, etc.

CONDITIONS

1. If weather conditions which could corrode the locks are expected to be a problem at the site, what provisions will be made to ensure lock effectiveness under these conditions?
2. Considering all feasible adversary tools, what will be the lowest mean penetration time for the lock? (See Underwriters' Laboratories Standards, Military Specifications and Standards, and Federal Specifications.)

If Combination Locks Will Be Used:

3. Will the lock satisfy standards issued in Underwriters' Laboratories UL-768 or Federal Specification FF-P-110F if it is a padlock?
4. How will the combination on the lock be changed?
5. Will the padlock have an exposed change key keyhole?
6. What kind of protection will be incorporated to protect against forcible defeat?
7. What kind of protection will be incorporated to protect against surreptitious defeat?

If Key Locks Will Be Used:

8. Will the lock satisfy standards issued in UL-437 and FF-P-001480, MIL-P-43607D, or MIL-P-43951 if it is a padlock?
9. If the key lock is a padlock, which standard in question 8 will it satisfy?
10. What type of master-keying system will be used?
11. What type of expedient rekeying system will be used?
12. What kind of protection will be incorporated to protect against forcible defeat?

13. What kind of protection will be incorporated to protect against surreptitious defeat?

If Electronic Locks Will Be Used:

14. Will a fail-safe or fail-secure system be employed in case of power failure?
15. Will there be a key lock override?
16. What type of locking device will be used?
17. What kind of protection will be incorporated to protect against forcible defeat?
18. What kind of protection will be incorporated to protect against surreptitious defeat?

If Mechanical Keyless Locks Will Be Used:

19. What locking mechanism function will be employed?
20. Will there be a key lock override?
21. Will there be any protection against forcible defeat?
22. Will there be any protection against surreptitious defeat?

Related Questionnaires

23. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System.
 - b. Emergency Generator Systems.

ANSWERSCONDITIONS

1.
 - a. Weather conditions are not expected to be a problem.
 - b. Locks will be inspected and replaced if they are corroded.
 - c. No provisions will be made.
2. _____.

Combination Locks

3.
 - a. Yes.
 - b. No.
4.
 - a. The combination will be changed using a special change key after the old combination has been dialed on the "change index."
 - b. The tumbler wheel pack will be taken apart and each wheel will be hand changed.
 - c. The combination will be changed using a special change key with the combination dialed on the "open index."
5.
 - a. No.
 - b. Yes.
6.
 - a. The lock will have hardened barriers covering the bolt mechanism and the lock case, and the lock will contain mechanical and thermal relocking devices.
 - b. The locking mechanism will be covered by hardened barriers and contain a mechanical relocking device.
 - c. A mechanical relocking device.
 - d. There will be no protection.
7.
 - a. (See UL-768, Group 1R.) The lock will be highly resistant to manipulation for 20 man-hours plus 20 man-hours of radiological attack.
 - b. (See UL-768, Group 1.) The lock will be highly resistant to manipulation for 20 man-hours.
 - c. (See UL-768, Group 2.) The lock will be reasonably resistant to unauthorized entry.
 - d. The lock will be a padlock with a shackle.
 - e. The lock will be a padlock without a shackle.

Key Locks

8.
 - a. Yes.
 - b. No.

9.
 - a. Mil-P-43607D, or key lock is not a padlock.
 - b. Mil-P-43951.
 - c. FF-P-001480.
 - d. None of the above.

10.
 - a. A non-mastered set of locks will be used in all areas throughout the facility.
 - b. A non-mastered set of locks will be used for PA, MAA, VA, and access to vital equipment or SNM, but master key sets will be used for less sensitive areas.
 - c. Master keying will be used throughout the facility.

11.
 - a. Barrier-protected interchangeable cores.
 - b. Exposed interchangeable cores.
 - c. Complete padlock and door cylinder changeout.
 - d. Rekeying each lock individually.

12.
 - a.
 - (1) Hardened body, guardplates, and shields; hardened or threaded shackle and bolts (all with substantial radii, rather than sharp internal corners), and
 - (2) Equivalent melting points of the key mechanism and the surrounding material.
 - b. Part (1) above.
 - c. There will be no protection.

13.
 - a. Positively coupled key and dead bolt mechanism with highly pick-resistant key mechanism using anti-pick and -decoding variations. Key removal only when locking device is in the lock or unlock positions.
 - b. Positively coupled key and dead bolt mechanism with key removal only when locking device is in the lock or unlock positions.
 - c. Positively coupled key and dead bolt mechanism.
 - d. There will be no protection.

Electronic Locks

14.
 - a. Yes, a fail-secure system.
 - b. Yes, a fail-safe system.
 - c. No.

15.
 - a. Yes.
 - b. No.
16.
 - a. An electric strike.
 - b. An electric bolt.
 - c. An electromagnetic latch.
17.
 - a. The electric strike or bolt and associated wiring will be protected by hardened barriers.
 - b. The electric strike or bolt will be protected by hardened barriers.
 - c. There will be no protection.
18.
 - a. Anti-magnetic material (mu metal) surrounding the solenoid strike/bolt, with a positively coupled locking mechanism.
 - b. Positively coupled locking mechanism.
 - c. There will be no protection.

Mechanical Keyless Locks

19.
 - a. A bolt.
 - b. A latch.
20.
 - a. Yes.
 - b. No.
21.
 - a. Yes.
 - b. No.
22.
 - a. Yes.
 - b. No.

4.53 Manual Alarm Recording

FUNCTION

The function of this procedure will be to maintain written logs and records of all alarms which are annunciated at the Alarm Stations (CAS and SAS).

CONDITIONS

1. What type of alarms will be recorded?
2. Will the log include all of the following information?
 - type of alarm.
 - time of annunciation.
 - source and location of alarm.
 - cause of alarm.
 - response to alarm.
3. Will the alarm be recorded in a timely manner?
4. If someone other than the security shift supervisor in the CAS logs in an alarm, will the supervisor verify the log information?
5. Will security personnel be properly trained to record alarms?

ANSWERSCONDITIONS

1.
 - a. True alarms, including tamper-indicating alarms, false alarms, and alarm checks.
 - b. True alarms, including tamper-indicating alarms, and false alarms.
 - c. True alarms only.
2.
 - a. Yes.
 - b. No.
3.
 - a. Alarm will be recorded immediately following response to alarm.
 - b. Alarm will be recorded prior to the end of the shift during which it occurred.
 - c. Alarm will be recorded during a shift other than the one during which it occurred.
4.
 - a. Yes.
 - b. No.
5.
 - a. Security personnel will be required, as part of their training, to learn procedures for logging in alarms.
 - b. Security personnel will be instructed on procedures for logging in alarms.
 - c. Security personnel will be told to log in alarms, but no instructions will be given.

4.54 Master (Fixed) RadioFUNCTION

The function of the master radio will be to provide continuous communication between guards on patrol and the alarm stations and between the alarm stations and the offsite forces.

CONDITIONSSite ConditionsPhysical

1. Where will the equipment be located?

Operation

2. What kind of communication capability with local law enforcement authorities will the equipment provide?

Environmental ConditionsNatural

3. Will attenuation of radio frequency (RF) transmissions associated with the propagation path be examined?

Performance ConditionsInstallation

4. What emission (type of modulation) will be used?
5. Will preoperational test of this equipment be conducted?
6. On what frequency or frequencies will this equipment be licensed to operate?

Operation

7. Over what distance will fixed-site communications be possible?

Maintenance

8. Will maintenance be performed on a mean-time-between-failure (MTBF) basis?

Reliability

9. Will a program be established to ascertain the condition of this equipment and its anticipated performance in terms of operational reliability?
10. What operational tests will be performed on this equipment?

Diversity and Redundancy

11. Will this be the only equipment, in addition to commercial telephone service, capable of performing the designated function?

VulnerabilitiesAdversary Attributes

12. Will there be a procedure whereby authentic transmissions are coded so as to distinguish them from adversary-initiated transmissions?

Related Questionnaires

13. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System.
 - b. Equipment Checks/Maintenance.
 - c. Emergency Generator Systems.

ANSWERSCONDITIONSSite ConditionsPhysical

1. a. Equipment will be located in both central and secondary alarm stations.
- b. Equipment will be located at the central alarm station only.
- c. Equipment will be located at the secondary alarm station only.

Operation

2. a. It will provide direct continuous communication with offsite law enforcement authorities.
- b. It will provide communications with offsite law enforcement authorities through an intermediary.

Environmental ConditionsNatural

3. a. For an extensive period of time (more than a month), propagation attenuation effects will be surveyed at various times of the day.
- b. Propagation attenuation effects will be spot checked at various times of the day.
- c. Propagation attenuation effects will be cursorily examined by means of a functional test.

Performance ConditionsInstallation

4. a. Single sideband (SSB).
- b. Frequency modulation.
- c. Amplitude modulation.
5. a. Tests of the equipment will be extended in time to determine the reliability of the equipment.
- b. The equipment will be tested under stressful conditions.

- c. Functional tests will be performed to confirm that the equipment operates properly.
 - d. Preoperational tests will be conducted with the equipment in place.
6. a. There will be a number of frequencies in the VHF band.
 b. There will be a number of frequencies in the HF band.
 c. It will be licensed for a single frequency.

Operation

7. a. More than 100 miles.
 b. From 10 to 100 miles.
 c. From 1 to 10 miles.
 d. Over a relatively short line-of-sight distance.

Maintenance

8. a. Yes.
 b. No.

Reliability

9. a. The licensee will maintain a quality-control chart system based on manufacturers' specifications, an operating history of this equipment and types similar to it, and a careful review of the preventive maintenance program in order to anticipate any emerging problems.
 b. The records of the preventive maintenance program will be monitored to anticipate problems.
 c. It is expected that the preventive maintenance program will both reveal and cope with any emerging problem.
10. a. A program will be established whereby simulated exercises will be performed at random to evaluate the effectiveness of this equipment.
 b. The equipment will be tested at a random time once each work shift.
 c. The equipment will be tested at a regular time once during each work shift.
 d. The equipment will be tested periodically to determine if it is functioning.

Diversity and Redundancy

11. a. Microwave communication and other independent communications will be available.

- b. Microwave communication will be available.
- c. There will be no other independent communications performing this function.

Vulnerabilities

Adversary Attributes

- 12. a. There will be a changing code with each transmission to ensure its validity.
- b. The formal structure of the transmission will be relied upon to provide assurance.
- c. There will be an independent means of verifying the source of the transmission, e.g., direction finding.
- d. There will be nothing beyond the voice recognition of the personnel involved.

4.55 Microwave Systems--Exterior

FUNCTION

The primary function of the microwave sensor will be to sense penetrations at the PA boundary and isolation zones.

CONDITIONS

Site Conditions

1. Will structures, trees, shrubs, and weeds be removed from the zone under surveillance to minimize wind-induced nuisance alarms?
2. Will the grade specification for the area under surveillance be maintained within 15 centimetres?
3. What will be done to prevent initiation of alarms by animals?

Environmental Conditions

4. What means of lightning protection will be provided?
5. If electromagnetic interference (EMI) from high-voltage transmission lines or RF transmitters are expected to exist at the site, will tests be conducted to determine system performance in EMI fields?

Performance Conditions

Installation

6. What will be the maximum separation of the transmitter/receiver heads for any segment of the system?
7. Will the transmitter/receiver heads be mounted at a height which maximizes the system's capability to detect specific types of intruders?
8. What will the installation specifications for overlapping of sensor segments be?

Operation

9. What criteria will be used to determine the sensor sensitivity setting?
10. Will different modulating frequencies be used for adjacent zones in order to reduce cross link modulation or mutual interference?

11. Considering the cross-over areas of the paths of microwave systems at corners and where sensor heads overlap to continue coverage beyond the range of single systems, will there be zones where a stomach-crawling intruder could cross the microwave beams undetected?
12. Will it be possible to discriminate between a stomach-crawling intruder moving parallel to the beam and nuisance alarm sources for the same or smaller radar cross section?
13. How often will the following sensor performance tests be conducted? (See IDS Handbook, Vol. I, Sec. 4.2.3 for definition of these tests.)
 - a. Normal walk.
 - b. Run.
 - c. Shuffle walk.
 - d. Simulated crawl.

Maintenance

14. Will preventive maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data if it is available?

Reliability

15. If the sensor system has self-test capability, what will be the test frequency?

Related Questionnaires

16. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System.
 - b. Emergency Generator Systems.
 - c. Equipment Checks/Maintenance.
 - d. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.
2. a. Yes.
b. No, however, it has been determined that a stomach-crawling intruder moving parallel to the beam cannot defeat the system at any point along the sensor's range.
c. No.
3. a. Either animals are not common to the site or the system will be installed between fences.
b. All vegetation will be cleared to reduce the attractiveness to animals.

Environmental Conditions

4. a. (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings, and concrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and
(2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel, which in turn will be bonded to the structure (Faraday type) shield and a good ground, and
(3) At the entry panel, primary surge arresters, e.g., gas-filled spark gaps, will be connected between each cable conductor and ground, and
(4) If solid state electronic or other equipment sensitive to short-time overvoltage is to be protected, then secondary surge protection, e.g., silicon junction avalanche devices or metal oxide varistors, will be connected at the equipment between each cable conductor and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
b. All of the above except (1), plus properly installed and grounded lightning rods.

- c. Only (2) and (3) or, if sensitive equipment, only (2) and (4).
 - d. Only (2).
5. a. Yes, or EMI is not expected to exist at the site.
b. No.

Performance Conditions

Installation

6. a. The maximum separation should be no greater than the distance that permits the detection of a human stomach-crawling intruder moving parallel to the beam (usually between 80 and 120 metres depending upon the particular equipment).
- b. The maximum separation should be no greater than the distance that will permit the detection of an upright walking human intruder (usually less than 200 metres).
- c. The maximum separation should be no greater than the distance that will permit detection of a truck (usually less than 333 metres).
7. a. The sensor heads will be mounted at a height (usually 60 centimetres for 120-metre separation between transmitter and receiver) for detection of the stomach-crawling intruder moving parallel to the beam.
- b. The sensor heads will be mounted at a height (usually 90 to 106 centimetres for 120-metre separation between transmitter and receiver) to reduce the nuisance alarm rate from animals when the detection of the upright man and not the crawler is the only requirement.
- c. The sensor heads will be mounted at a height (usually 120 centimetres for 120-metre separation or greater between transmitter and receiver) for detection of automobiles or other equally large objects.
8. a. The placement of the transmitters and receivers will be such that the overlays of each segment will be in the protection envelope of an adjacent segment.
- b. There will be no overlap of the system; other sensors will be used to fill gaps.

Operation

9. a. Guidance found in Regulatory Guide 5.44, "Perimeter Intrusion Alarm Systems" when they differ from the manufacturer's recommendation.

- b. Guidelines in Volume 1 of Intrusion Detection Systems Handbook when they differ from manufacturer's recommendations.
 - c. Manufacturer's recommendations.
10. a. Yes.
b. No.
11. a. There will be no zones where the stomach-crawling intruder might pass undetected.
b. There will be one or two discrete dead zones.
c. There will be no detection in these areas.
12. a. Yes, by employing sophisticated analog signal processing techniques.
b. Yes, for potential alarm sources with radar cross sections smaller than approximately 0.07 metre squared (rabbits can have a radar cross section larger than this).
c. No.
13. a. a. With initial installation and daily thereafter.
b. With initial installation and weekly thereafter.
c. With initial installation and monthly thereafter.
- b. a. With initial installation and daily thereafter.
b. With initial installation and weekly thereafter.
c. With initial installation and monthly thereafter.
- c. a. With initial installation and monthly thereafter.
b. With initial installation and quarterly thereafter.
c. With initial installation and biannually thereafter.
- d. a. With initial installation and weekly thereafter.
b. With initial installation and monthly thereafter.
c. With initial installation and quarterly thereafter.

Maintenance

14. a. Yes, or MTBF data will not be available.
b. No.

Reliability

15. a. Less than 30 seconds.
b. 30 to 60 seconds.
c. 1 to 5 minutes.
d. Sensors will not have a self-test capability.

4.56 Mobile RadioFUNCTION

The function of the mobile radio will be to provide communication between guards on patrol, between guards on patrol and manned alarm stations, and between onsite and offsite forces.

CONDITIONSSite Conditions

1. If hills, vegetation, or other forms of attenuation are found in the region over which the radio is going to be used, what provisions will be made to ensure complete and reliable communications?
2. What will be the maximum distance over which the radio will be expected to perform?

Environmental ConditionsNatural

3. If environmental conditions, e.g., frequent electrical storms which could adversely affect the radio, are anticipated, what provisions will be made to ensure communication under these conditions?

Manmade

4. If manmade sources of radio frequency interference (RFI), such as power lines, vehicle ignition, are anticipated, what provisions will be made to ensure communication under these conditions?

Performance ConditionsInstallation

5. Will the radio be operable when removed from the associated vehicle?

Operation

6. For what frequency or frequencies will the radio be licensed?
7. What type of modulation will be used?

Maintenance

8. Will preventive maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?
9. What operational tests will be performed on the radio?

VulnerabilitiesAdversary Attributes

10. What procedures will be followed to allow the radio operator to distinguish authentic transmissions from adversary-initiated transmissions?

Component Protection

11. Will there be any special precautions to protect the equipment from forceful disabling?

Relating Questionnaires

12. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSSite Conditions

1. a. The region over which the radio is going to be used will not include hills, vegetation, etc., which could adversely affect communication capability, or provisions, such as installation of repeater stations, will be made to ensure complete and reliable communication.
b. No provisions will be made.
2. a. More than ten miles.
b. Five to ten miles.
c. Less than five miles.

Environmental ConditionsNatural

3. a. Environmental conditions which could adversely affect the radio are not anticipated, or other means of communication will be used under these conditions.
b. No provisions will be made.

Manmade

4. a. Manmade sources of RFI are not anticipated, or alternative channels will be provided to cope with RFI.
b. No provisions will be made.

Installation

5. a. Yes.
b. No.

Operation

6. a. A number of frequencies in the VHF band.
b. A number of frequencies in the HF band.
c. Licensed for a single frequency.
7. a. Frequency modulation (FM).
b. Amplitude modulation (AM).

Maintenance

8.
 - a. Yes.
 - b. No.
9.
 - a. A program will be established whereby, at random, simulated exercises will be performed to evaluate component effectiveness.
 - b. The equipment will be tested periodically to determine if it is functioning.
 - c. The equipment will be tested once each workshift at a random time.
 - d. The equipment will be tested at a regular time once each workshift.

VulnerabilitiesAdversary Attributes

10.
 - a. There will be a changing code with each transmission to ensure validity.
 - b. The formal structure of the transmission will be relied upon.
 - c. In cases of question there will be an independent means of verifying the source, such as direction finding.
 - d. Voice recognition will be sufficient.

Component Protection

11.
 - a. It will be protected by virtue of its location in a locked vehicle which will in turn be parked in a locked area when not in use.
 - b. It will be protected by virtue of its location in a locked vehicle when unattended.
 - c. There will be no special precautions.

4.57 Motion Detectors

- Interior Infrared Systems
- Interior Microwave systems
- Ultrasonic and Sonic Systems

FUNCTION

The function of each of these four generic sensor types will be to detect intruder motion in a designated area inside the MAA and/or VA.

CONDITIONS

Site Conditions

1. What type of material will be used for the room or building walls in the sensing area?
2. Will detection zones be compatible with potential changes in room or building content?

Environmental Conditions

3. If environmental conditions, e.g., meteorological phenomena, which could adversely affect the sensor systems are expected to occur at least 5 percent of the time, what provisions will be made to ensure detection under these conditions?
4. Will the environmental specifications of the sensors meet the expected extremes of temperature conditions?
5. If the sensors will be adversely affected by manmade interferences, e.g., electromagnetic powerlines, radio frequency, acoustical machinery, ventilating and heating equipment, telephone equipment, optical-fluorescent lights, seismic-machinery vibrations, what provisions will be made to ensure detection under these conditions?
6. What means of lightning protection will be provided?

Performance Conditions

Installation

7. Will detection zones provide adequate coverage for potential intruders?
8. If a sonic sensor is used, will the noise bother nearby personnel?

9. Will any of the sensors be susceptible to mount vibration?
10. Will potential problems exist with microwave interfering with other microwave and ultrasonic interfering with other ultrasonic?

Maintenance

11. Will preventive maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?

Reliability

12. How will it be determined if the sensor is operating?
13. If the sensor has self-test capability, what will be the test frequency?
14. How often will the sensor be subjected to a full operational test?

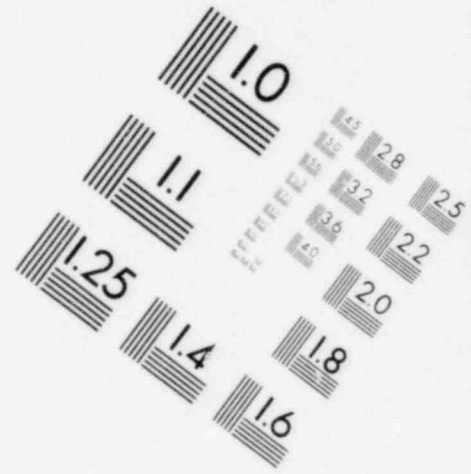
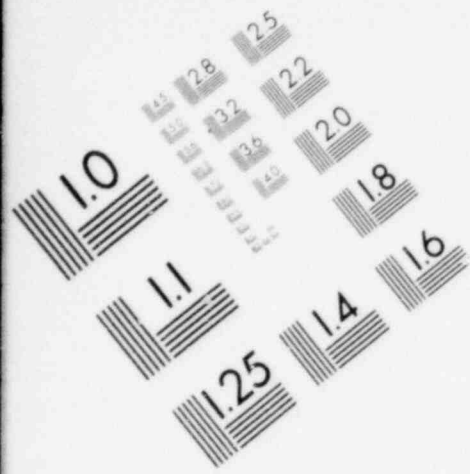
Vulnerabilities

Adversary Attributes

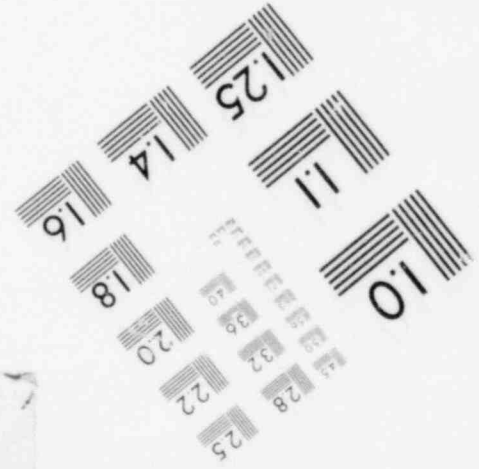
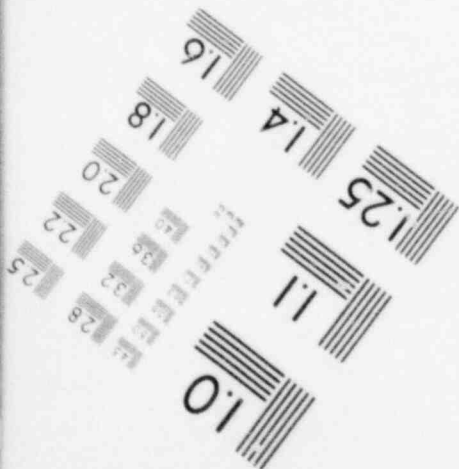
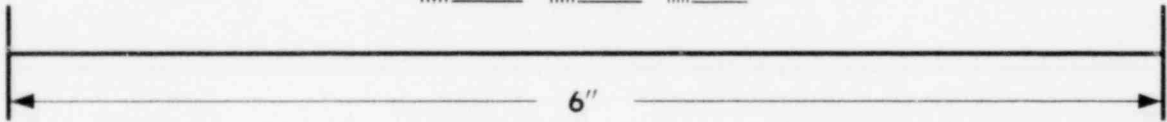
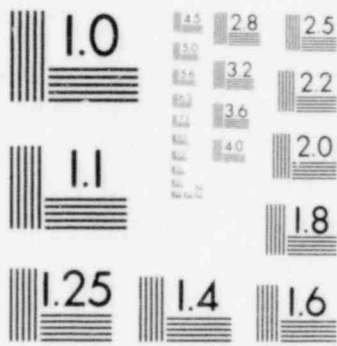
15. Will the sensor system be defeated by crawling, inching, rolling, or running techniques?
16. Will sensors be vulnerable to disabling by covering if an intruder can gain close proximity?
17. Will a shuffling/intermittent movement bias the sensor AGG so that sensitivity will be reduced significantly?

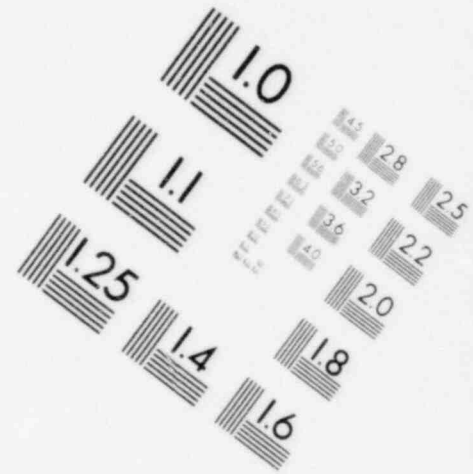
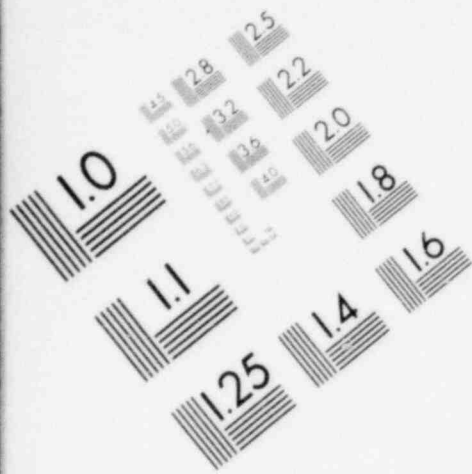
Related Questionnaires

18. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System.
 - b. Emergency Generator Systems.
 - c. Equipment Checks/Maintenance.
 - d. Tamper-Indicating Circuitry.

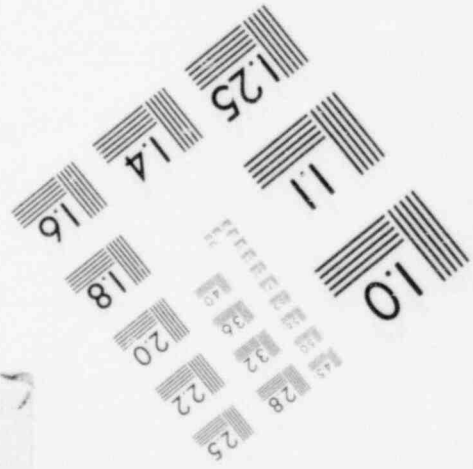
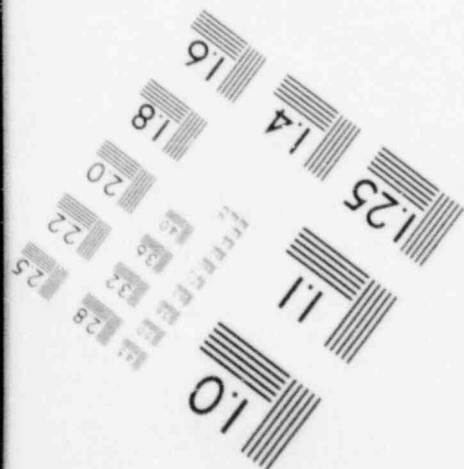
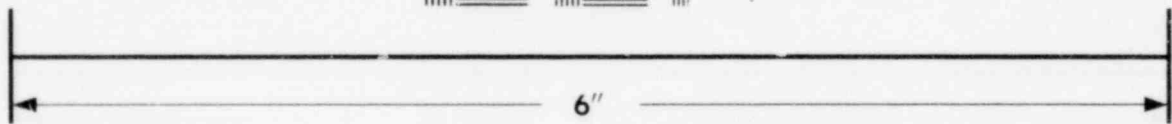
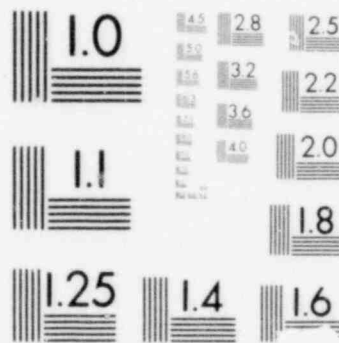


**IMAGE EVALUATION
TEST TARGET (MT-3)**





**IMAGE EVALUATION
TEST TARGET (MT-3)**



ANSWERSCONDITIONSSite Conditions

1.
 - a. The walls will be concrete or metal.
 - b. The walls will be plasterboard, sheetrock, or woodpaneling, but the sensor energy will not be directed at them or will not penetrate them.
 - c. The walls will be plasterboard, sheetrock, or woodpaneling, but the sensor sensitivity will be reduced to eliminate external false alarm sources.
 - d. The walls will be plasterboard, sheetrock, or woodpaneling, but no provisions will be made to reduce externally-induced false alarms.
2.
 - a. Yes.
 - b. No, but provisions will be made to allow for the incompatibility.
 - c. No.

Environmental Conditions

3.
 - a. Environmental conditions which could adversely affect the sensor are not expected to be a problem, or another sensor which is not sensitive to the adverse conditions will be used to detect motion in the room or in the building.
 - b. No provisions will be made.
4.
 - a. Yes.
 - b. No, but the room or the building will be heated and/or air-conditioned as required.
 - c. No.
5.
 - a. No manmade interferences are expected to occur, or the sensor will be hardened against these interferences when possible, or an alternative means of motion detection will be used.
 - b. No provisions will be made.
6.
 - a. (1) Equipment will be enclosed in a grounded metal enclosure (Faraday shield). Generally acceptable approximations are well-bonded all-metal structures or buildings, and concrete structures or buildings with all rebar and metal sheathing, including roof and floor, bonded, and

- (2) All conductors penetrating the structure (plumbing, conduit, cable shields) will be bonded to an entry panel, which in turn will be bonded to the structure (Faraday type) shield and a good ground, and
 - (3) At the entry panel, primary surge arresters, e.g., gas-filled spark gaps, will be connected between each cable conductor and ground, and
 - (4) If solid state electronic or other equipment sensitive to short time overvoltage is to be protected, then secondary surge protection, e.g., silicon junction avalanche devices or metal oxide varistors, will be connected at the equipment between each cable conductor and ground. Sufficient circuit delays are necessary to permit the primary surge protection to function.
- b. All of the above except (1), plus properly installed and grounded lightning rods.
 - c. Only (2) and (3) or, if sensitive equipment, only (2) and (4).
 - d. Only (2).

Installation

- 7.
 - a. All normal entries and necessary intruder pathways will be within detection zones, and the multiple sensors required for coverage will also provide mutual tamper protection.
 - b. All normal entries and necessary intruder pathways will be within detection zones, and multiple sensors will be required for coverage.
 - c. Detection zones will not be covered adequately.
- 8.
 - a. No, or a sonic sensor will not be used.
 - b. Yes.
- 9.
 - a. No.
 - b. Yes, but the sensor will be securely mounted so that vibration will be minimal.
 - c. Yes, but no provisions will be made to prevent vibration.
- 10.
 - a. No.
 - b. Yes.

Maintenance

- 11.
 - a. Yes.
 - b. No.

Reliability

12.
 - a. By automatic self-test.
 - b. By manual self-test.
 - c. By daily walk procedure.
 - d. By walk tests of intervals longer than one week.
13.
 - a. A frequency of less than 30-second intervals.
 - b. A frequency of 30-second to 1-minute intervals.
 - c. A frequency of 1- to 5-minute intervals.
 - d. Sensors will not have a self-test capability.
14.
 - a. At least once every guard shift.
 - b. At the beginning and end of any period that it is used but not less frequently than once every seven days.
 - c. Every few months or more often if repairs or changes have been made.

VulnerabilitiesAdversary Attributes

15.
 - a. No.
 - b. Yes, but the time necessary to defeat the system would provide a significant delay to aid detection by other means.
 - c. Yes, but the time delay would probably not provide significant delay.
16.
 - a. No.
 - b. Yes, but the time necessary to defeat the system would provide significant delay to aid detection by other means.
 - c. Yes, but the time delay would probably not provide significant delay.
17.
 - a. No.
 - b. Yes.

4.58 Multi-Man RuleFUNCTION

The multi-man rule requires that an individual in an area be accompanied by one or more technically competent individuals who can detect any incorrect or unauthorized procedure while observing the other person(s) at all times.

CONDITIONS

1. Under what conditions will the multi-man rule be required?
2. How will the multi-man rule be enforced?
3. What will be the requirements specified for the multi-man rule?
4. How will multi-man teams be formed and assigned to a specific task?

ANSWERSCONDITIONS

1. The multi-man rule will
 - a. Be required at any time an individual is in an area where special nuclear material or vital equipment are accessible.
 - b. Be required at any time an individual is working with special nuclear material or vital equipment.
 - c. Not be a formal requirement at this facility.
2.
 - a.
 - (1) Access to the area will be controlled to admit personnel only as multi-man teams, as specified, to perform the assigned task, and
 - (2) The area will be under CCTV surveillance when occupied, and
 - (3) Unannounced random checks by security or supervisory personnel will be performed.
 - b. (1) and (2) above.
 - c. (1) and (3) above.
 - d. (1) above.
3. Personnel operating under the multi-man rule will be required to
 - a. Work on the same task in full view of each other throughout the task.
 - b. Work in full view of each other at all times, and have sufficient knowledge of each other's tasks to detect any unauthorized activities.
 - c. Work in full view of each other at all times.
 - d. Be present in the same area.
4.
 - a. Individuals will be randomly assigned to multi-man teams at the beginning of the shift.
 - b. Individuals will receive at least one day's notice of their random assignment to multi-man teams.
 - c. Individuals will be permanently assigned to teams, but the teams assigned to the task will be rotated.
 - d. The same team, composed of permanently assigned members, will perform the specified task every time it is necessary.

4.59 Night Vision Devices (Goggles, Scopes)

FUNCTION

The function of the night vision device (NVD) will be to permit surveillance and/or gun sighting under poor light conditions.

CONDITIONS

Site Conditions

1. What procedure will be followed in selecting an NVD for use at the site?
2. If the primary factor (excluding cost) in the selection of an NVD is low-level illumination in the observation area, e.g., cloudy to clear starlight, which NVD configuration (intensifier device and objective lens) will be used?
3. If the primary factor (excluding cost) in the selection of an NVD is the presence of bright light sources, e.g., pole-mounted lights, roads frequently traveled by cars, in the observation area, which NVD intensifier device will be used?

Performance Conditions

Function

4. If the NVD will be used for surveillance only, what type of device will be used to provide effective surveillance?
5. If a scope will be used for surveillance, what type of viewing ocular will be used in the NVD configuration?
6. If a scope will be used as a rifle-mounted gunsight, will the configuration include a catadioptric lens and a monocular viewer?
7. If a scope will be used as a gunsight as well as for surveillance, will it be rugged sized and equipped with a reticle?
8. If goggles will be used in conjunction with firearms, will the firearm be equipped with an infrared aiming light?

Operation

9. Will NVDs be readily available to members of the guard force who require their use?

10. Will members of the guard force be instructed in the use and limitations of NVDs?

Maintenance and Reliability

11. What procedures will be followed if an NVD user suspects equipment problems, e.g., degradation of brightness, clarity?
12. If an NVD is not used regularly, will it be operationally tested?
13. What provisions will be made in case of battery failure?

Vulnerabilities

14. What provisions will be made to protect against an adversary who might introduce a bright light source into the observation area?

ANSWERSCONDITIONSSite Conditions

1. a. The function which the NVD will serve and the conditions under which it will operate will be analyzed. One or more NVD considered suitable will be borrowed from the manufacturer or some other source and tested at the site under normal operating conditions. Based on such a test, an NVD will be selected for purchase.
- b. The function which the NVD will serve and the conditions under which it will operate will be analyzed. Based on this analysis, an NVD will be selected for purchase.
- c. The function which the NVD will serve will be the basis for the selection of an NVD for purchase.
2. a. Low-level illumination will not be a primary factor, or a first-generation device with a catadioptric lens will be used.
- b. A first-generation device with a camera lens or a second-generation device with a catadioptric lens will be used.
- c. A second-generation device with a camera lens will be used.
3. a. Bright light sources will not be a primary factor since they are expected to be minimal in the observation area.
- b. A second-generation device will be used.
- c. A first-generation device will be used.

Performance ConditionsFunction

4. a. Goggles.
- b. Scope with tripod mount.
- c. Scope.
5. a. A monocular viewer will be used, thus avoiding the problem of facial illumination which is inherent in the use of a binocular viewer (this problem is twofold: it allows the observer to be seen, and it ruins his dark vision for a short period of time).

- b. A binocular viewer will be used but only in cases where the problems caused by facial illumination are not considered critical, e.g., use by a guard in a guard tower.
 - c. A binocular viewer will be used.
- 6. a. Yes.
 - b. No.
- 7. a. Yes.
 - b. No.
- 8. a. Yes.
 - b. No.

Operation

- 9. a. NVDs will be issued to those guards requiring their use at the beginning of each night shift.
 - b. NVDs will be stored in locations accessible to the guards, e.g., near patrol points and alarms stations, for their use if necessary.
 - c. NVDs will not be readily accessible to guards requiring their use.
- 10. a. Yes, they will receive "hands-on" instruction.
 - b. They will have written instructions available with each NVD.
 - c. There will be no instructions.

Maintenance and Reliability

- 11. a. The user will report the problem to the person responsible for the NVDs. The NVD will then be operationally tested at the facility and if necessary sent to the manufacturer for further testing. During this time, a spare NVD will be available for use.
 - b. The same procedure as in a. above, but no spare NVD will be available.
 - c. Nothing will be done unless the NVD completely fails to operate.
- 12. a. Yes.
 - b. No.
- 13. a. The battery (or batteries) will be replaced immediately. Spare batteries will be available at the same location as the NVD.
 - b. The same as a. above, but the spare batteries will be kept elsewhere on the site.

- c. No spares will be readily available. An attempt will be made to obtain spares locally as soon as possible; if they are unavailable locally, they will be special ordered.

Vulnerabilities

- 14. a. The presence of a bright light source will be a primary factor in the selection of an NVD.
- b. No provisions will be made.

4.60 Pat-Down SearchFUNCTION

The function of the pat-down search will be to detect contraband introduced on personnel entering the PA, MAA, and/or VA.

CONDITIONSSite Conditions

1. Will all personnel be searched whenever they make an entrance or an exit?
2. Will long personnel lines force security personnel to rush through a search?
3. Will both a female and a male guard be present during the search?
4. If personnel are not required to change into standard work clothes, will lockers or similar storage areas be provided for extraneous clothing?
5. Will personnel be required to leave personal articles, such as keys, coins, wallets, outside the area?

Performance Conditions

6. Will personnel be required to open coats to facilitate a search?
7. Will all pockets be examined?
8. Will personnel be asked to remove hats for inspection?
9. Will personnel be asked to raise their arms to facilitate search of the torso area?
10. If special footwear is not provided, will high-top boots, etc., be examined for contraband?

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. Search will be conducted on a random basis, with more than 50 percent of personnel searched.
c. Search will be conducted on a random basis, with between 10 percent and 50 percent of personnel searched.
d. Search will be conducted on an occasional basis, with less than 10 percent of personnel searched.
2. a. No.
b. Occasionally.
c. This probably will be a frequent occurrence.
3. a. Yes.
b. No.
4. a. Personnel will be required to change into standard work clothes.
b. Yes.
c. No.
5. a. Yes.
b. No.

Performance Conditions

6. a. Coats will not be allowed in the area.
b. Yes.
c. No.
7. a. Yes.
b. No.
8. a. Hats will not be allowed in the area.
b. Yes.
c. No.
9. a. Yes.
b. No.
10. a. Yes, or special footwear will be provided.
b. No.

4.61 Personal Identification Numbers/Passwords

FUNCTION

The function of the numbers and passwords will be to provide a means of verifying identification of personnel entering the PA, MAA, and/or VA.

CONDITIONS

Site Conditions

1. Will the length of the memorized code be such that the probability of gaining access with a random guess will be small?
2. Will personnel be allowed to select their own memorized code?
3. What personnel, if any, will have access to a listing or tabulation of the memorized codes?

Performance Conditions

4. Will the memorized code be determined by some type of scrambling of the authorization number, i.e., badge or credential number, on a coded credential?
5. Will the device used for entering the memorized code be constructed so that others will not be able to see the code being entered?

Vulnerabilities

6. Will personnel be instructed not to write down on paper or to reveal to others their memorized codes?

ANSWERSCONDITIONSSite Conditions

1.
 - a. Yes, four characters or more will be used.
 - b. Yes, three characters will be used.
 - c. No, two characters or less will be used.
2.
 - a. No, the code will be randomly selected.
 - b. Yes, but personnel will be warned not to use codes with personal meanings, e.g., birth dates, and no repeated character strings will be allowed.
 - c. Yes, any code can be used.
3.
 - a. Knowledge of an individual's memorized code will be restricted to the individual himself; security personnel will have no means of retrieving memorized code numbers.
 - b. Only a small, limited number of authorized security personnel will have such access.

Performance Conditions

4.
 - a. No, the memorized code will be independent of the authorization number.
 - b. Yes.
5.
 - a. Yes, the code will be entered by the person alone in an enclosure.
 - b. Yes, a physical barrier of some type will obscure the view of the memorized-number keyboard from others.
 - c. No.

Vulnerabilities

6.
 - a. Yes.
 - b. No.

4.62 Photo Identification BadgesFUNCTION

The function of the photo identification badges will be to provide a means of verifying identification of personnel entering the PA, MAA, and/or VA.

CONDITIONSSite Conditions

1. How many employees will have access to the area?
2. Will some employees be authorized access, but actually access the area once a month or less?
3. Will guard rotation assignments be such that the security force can depend on facial recognition to enhance security?
4. How often will the photo be updated?
5. Will guards be trained to recognize distinct facial features?
6. How much time will be spent on facial comparison?
7. How far will the guard be located from the employee attempting access when comparison is made?
8. What will be the quality of the image on the photo I.D.?
9. If comparison will be remote, using CCTV, what will be the quality of the transmitted image of the photo I.D.?
10. If comparison will be remote, using CCTV, what will be the quality of the transmitted facial image?
11. If comparison will be remote, using CCTV, will the two images be displayed in a manner which facilitates comparison?

Performance ConditionsOperation

12. Will the security force be periodically tested, using unauthorized access attempts to ensure that the guards make serious and consistent efforts to detect differences between an individual's image and the image on the photo I.D.?

13. Will personnel be asked to remove sunglasses or other articles which will make facial comparison difficult?
14. Will the guard(s) comparing the images ever be distracted by other duties?
15. Will the guard comparing images be rushed to do his job, due to the pressure of long lines awaiting identification?

Vulnerabilities

16. How difficult will it be to fabricate a passable counterfeited badge?
17. If comparison will be remote, using CCTV, will the quality of the transmitted facial image be adequate to detect cosmetic facial changes?
18. If comparison will be remote, using CCTV, will the area where the CCTV images are acquired have adequate capabilities to detect single person entry and surreptitious activity?

ANSWERSCONDITIONSSite Conditions

1.
 - a. Less than 30.
 - b. Between 30 and 100.
 - c. More than 100.
2.
 - a. None.
 - b. Very few.
 - c. Many.
3.
 - a. Guards will not be rotated; the number of personnel accessing the area will be small and facial recognition will be appreciable.
 - b. Guards will not be rotated, but the number of personnel accessing the area will be large with some facial recognition.
 - c. Guards will be rotated throughout the facility and facial recognition will be minimal.
4.
 - a. Every year or less.
 - b. Every year to 2 years.
 - c. More than every 2 years.
 - d. When necessary.
5.
 - a. Yes, the guards will be periodically required to take a special course.
 - b. No.
6.
 - a. More than 5 seconds.
 - b. Between 3 seconds and 5 seconds.
 - c. Less than 3 seconds.
7.
 - a. Less than 5 feet.
 - b. 5 to 10 feet.
 - c. 10 to 20 feet.
8.
 - a. Good, the photo will have sharp color contrast against a recognizable background.
 - b. Adequate, verification can be made with some effort.
9.
 - a. Good, the image will have a sharp color contrast and will be large enough to make good comparison, or comparison will not be remote.
 - b. Adequate, the image will be good enough to make verification.
 - c. Poor, a copy of a photo I.D. may not be detected.

10. a. Good, the image will have sharp color contrast and will be of a quality to allow ease in identity verification, or comparison will not be remote.
- b. Adequate, the image will not be of the best quality; identity verification will be made with some effort.
- c. Poor, identity verification might be difficult.
11. a. Yes, they will be in close proximity and of the same physical size, or comparison will not be remote.
- b. No.

Performance Conditions

Operation

12. a. Yes.
- b. No.
13. a. Always.
- b. Most of the time.
- c. Sometimes.
- d. Never.
14. a. No.
- b. Yes.
15. a. No.
- b. Yes.

Vulnerabilities

16. a. Fabrication will require special equipment not commercially available.
- b. Fabrication will require high-cost equipment which is commercially available.
- c. Fabrication will require readily available low-cost equipment.
17. a. Yes, the video system will be a very high resolution color system, or comparison will not be remote.
- b. Such detection might be a problem.
- c. Don't know.

18. a. Yes, direct visual observation will be used, or comparison will not be remote.
- b. Yes, electronic surveillance/alarms will annunciate entry.
- c. No.

4.63 Physical Controls and Procedures for Keys, Locks, Combinations, and Cipher Systems

FUNCTION

The function of the controls for locks, keys, and combinations will be to ensure that unauthorized personnel do not gain access to locks, keys, etc.

CONDITIONS

1. Will keys, combinations, etc. be stored in a location secured by a combination lock?
2. Where will responsibility for control of locks, keys, combinations, etc. be placed?
3. Will keys and locks be permanently numbered?
4. How often will a physical inventory of locks, keys, etc. be performed?
5. What type of inventory records will be kept on locks, keys, etc.?
6. Will keys, combinations, etc. be issued only to a minimum number of personnel who require them to perform their official duties?
7. How will issuance of keys, magnetic cards, etc., be controlled?
8. Under what conditions will locks be changed?
9. Under what conditions will combinations on locks be changed?
10. Will issued keys be allowed offsite?

Related Questionnaires

11. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Locks (Keyed/Keyless).

ANSWERSCONDITIONS

1.
 - a. Yes, they will be stored in a locked fireproof container within a secured room.
 - b. Yes, they will be stored in a locked fireproof container within a nonsecured room, or openly within a secured room.
 - c. No.
2.
 - a. It will be the responsibility of a designated individual in the security division whose sole responsibility will be control of locks, keys, etc. An alternate will also be designated to perform these duties if necessary.
 - b. The responsibility for these controls will be in the security division, where one of various individuals will be assigned this task on a rotating basis.
 - c. The responsibility for these controls will be in the division where the locks are located. One individual and an alternate will be designated to perform these duties.
3.
 - a. Yes, and if the locks and keys are part of a master-keyed system, they will be numbered with unrelated number systems.
 - b. Yes.
 - c. No.
4.
 - a. Once every 3 to 6 months.
 - b. Once every 6 to 12 months.
 - c. Less frequently than once a year.
5.
 - a.
 - (1) The total number of locks and the corresponding keys and cards, and
 - (2) The number of keys or cards issued and the number of keys or cards on hand, and
 - (3) A comprehensive list of locks by ID numbers, their location, ID numbers or corresponding keys or cards, and
 - (4) A list of personnel authorized access to keys or cards.
 - b. (1), (2), and (3) above.
 - c. (1) and (2) above.

6. a. Yes.
b. No.
7. a. (1) All keys or cards will be issued only for the duration of the shift, and
(2) A log will be kept which includes the signature of the person being issued the key or card, the time of issue, and the time of return, and
(3) The identification and authorization of the person being issued the key or card will be verified.
b. (1) and (2) above.
c. (2) only.
8. a. (1) When a lock appears to have been compromised, and
(2) When there is duty reassignment or termination of personnel having access to the lock, and
(3) When a key or card is reported lost or an unrecorded key or card is found.
b. (1) and (2) above.
c. (1) only.
9. a. (1) When a lock appears to have been compromised or unauthorized access to the immediate area is suspected, and
(2) When there is duty reassignment or termination of personnel having access to the lock, and
(3) Routinely, at least twice a year.
b. (1) and (2) above.
c. (1) only.
10. a. No.
b. Keys to certain sensitive areas will not be allowed offsite.
c. Yes.

4.64 Portable RadiosFUNCTION

The function of the portable radio will be to provide communication between the guards on patrol, between guards on patrol and manned alarm stations, or between alarm stations.

CONDITIONSSite Conditions

1. Will alternative channels be provided to cope with possible radio frequency interference or false signals?
2. Will the region over which the components are going to be used be surveyed for complete reliable coverage?

Performance Conditions

3. What emission (type of modulation) will be used?
4. Will preoperational tests and inspections of these components be performed?
5. For what frequency or frequencies will this component be licensed?
6. What source of emergency power will be provided?
7. What will be the range (distance) over which this component is expected to perform?
8. Will this component be tested on a regular basis?

Maintenance

9. Will preventive maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?

VulnerabilitiesAdversary Attributes

10. Will there be a procedure to ascertain authentic transmissions?

Related Questionnaires

11. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.
2. a. Yes.
b. No.

Performance Conditions

3. a. Frequency modulation.
b. Amplitude modulation.
4. a. Yes.
b. No.
5. a. A number of frequencies in the VHF band.
b. It will be licensed for a single frequency.
6. a. Replaceable batteries.
b. None.
7. a. 3 to 5 miles.
b. 1 to 2 miles.
c. Relatively short line-of-sight distances.
8. a. Guard patrols will be polled at random intervals at least 8 times each shift.
b. Guard patrols will be polled at the end of each shift.
c. The component will be tested at least once each day.

Maintenance

9. a. Yes.
b. No.

VulnerabilitiesAdversary Attributes

10. a. With each transmission, there will be a changing code to ensure validity.

- b. The formal structure of the transmission will be relied upon.
- c. In case of questions, there will be an independent means, such as direction finding, of verifying the source.
- d. Voice recognition will be sufficient.

4.65 Positive Personnel Identification

- Fingerprint Personnel I.D. Verification
- Handwriting Personnel I.D. Verification
- Hand Geometry Personnel I.D. Verification
- Voice Print Personnel I.D. Verification

FUNCTION

The function of the identification procedure will be to provide a means of verifying the identification of personnel entering the PA, MAA, and/or VA.

CONDITIONS

Site Conditions

1. Will personnel perform jobs or wear clothing which will affect the unique characteristic used by the identifier?
2. What procedure will be used when a person requesting access cannot be identified?
3. Will personnel be enrolled on the identifier at a special enrollment station?
4. Will the personnel reference file used by the identifier be kept in a secure location?

Performance Conditions

5. Will the identifier have an acceptance tolerance which can be adjusted by security personnel to make it easier for personnel having trouble being identified?
6. When the identifier Type I (i.e., false rejection) error rate is considered acceptable, what will the Type II (i.e., false acceptance) error rate be?
7. Will the identifier system be equipped to detect successive failures which indicate that someone is trying to gain unauthorized entry?
8. Will the identifier system utilize a coded credential to obtain a credential number to define the location of the user's reference file at a central control?
9. If the user's reference file is stored on the individual's coded credential, will that information be encrypted?
10. Will the identifier system perform personnel accountability and, in effect, have antipassback capability?

Vulnerabilities

11. How difficult will it be to fabricate or forge a false characteristic in order to gain unauthorized access?
12. Will the identification area be observed either directly or with CCTV in order to watch for tampering or surreptitious activity?

Related Questionnaires

13. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Equipment Checks/Maintenance.
 - b. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite Conditions

1. a. No.
b. Yes.
2. a. Personnel will be requested to exit the door entered, and proceed to a bypass portal where another identification attempt will be made under security supervision.
b. Supervisory personnel will be summoned to make an identification decision.
3. a. Yes.
b. No, any identifier can be used for enrollment; however, an authorized security officer must be present and identified before enrollment can take place.
c. No, any identifier can be used.
4. a. Yes, in the central controller storage, which has limited access.
b. No.

Performance Conditions

5. a. No.
b. No. Although the tolerance will be adjusted automatically, this information cannot be examined or modified.
c. Yes.
6. a. Less than 3 percent.
b. From 3 to 5 percent.
c. More than 5 percent.
7. a. Yes.
b. No.
8. a. Yes.
b. No, but the identifier will use a coded credential which contains the user's reference file.
c. No.

9. a. Yes, or a user's reference file will not be stored.
b. No.
10. a. Yes, or identifier system will not perform personnel accountability.
b. No.

Vulnerabilities

11. a. It will require highly technical, detailed information about the system, and special equipment and techniques.
b. It will require detailed information about the system and a fabricated replica of the characteristic used.
c. It will require only a simple replica of the characteristic used.
12. a. Yes, all the time.
b. Yes, most of the time.
c. No.

4.66 Response VehiclesFUNCTION

The function of the response vehicle will be to enable rapid security force response to non-routine events and to augment guard patrol capabilities.

CONDITIONSEnvironmental Conditions

1. If environmental conditions, e.g., extreme cold, which could adversely affect the vehicles are anticipated, what provisions will be made to ensure availability of a response vehicle?

Performance ConditionsOperation

2. Will vehicles designated for use in response situations be readily available?
3. Will response personnel be properly trained and qualified to operate the vehicle?

Maintenance

4. How often will preventive maintenance be performed?
5. What procedure will be followed for performing maintenance on response vehicles?

Reliability

6. What provisions will be made in case of vehicle-part failure?
7. Will at least one extra vehicle be available in case a vehicle fails to function?
8. Will the vehicles available be consistent with the licensee's contingency plan?

VulnerabilitiesAdversary Attributes

9. Will there be several motor pools in several different locations in the facility?

Component Protection

10. Will vehicles be adequately protected against unauthorized access to or removal from designated motor pools?

ANSWERSCONDITIONSEnvironmental Conditions

1. a. Conditions which could adversely affect the vehicles are expected to occur infrequently, and vehicles will be protected from adverse environmental conditions or else vehicles which can withstand these conditions will be selected for the facility.
- b. No provisions will be made; such conditions will be dealt with as they occur.

Performance ConditionsOperation

2. a. Vehicles will be kept in motor pools conveniently located near alarm stations and guard control points.
 - b. Vehicles will be kept in a centrally located motor pool.
 - c. Vehicles will be kept in a motor pool which will not be centrally located.
 - d. Vehicles will be used for functions other than response which at times may affect ability to respond.
3. a. Yes.
 - b. No.

Maintenance

4. a. Preventive maintenance will be performed on a regular basis, at least as often as is recommended by the manufacturer for the site and operating conditions under which the vehicle will be used.
 - b. Preventive maintenance will be performed on a regular basis, every 6 months or 5000 miles, whichever occurs first.
 - c. Maintenance will be performed only when the vehicle is not operating correctly, e.g., difficult starting.
5. a. Maintenance will be performed onsite by facility mechanics assigned this task.
 - b. Maintenance will be performed onsite by a mechanic not employed by the licensee.
 - c. Maintenance will be performed offsite.

Reliability

6.
 - a. Replacement parts will be kept in stock; the vehicle will be repaired immediately.
 - b. Replacement parts will be kept in stock; the vehicle will be repaired within 24 hours.
 - c. Replacement parts will be ordered from a local supplier. Parts may or may not be in stock.
7.
 - a. Yes.
 - b. No.
8.
 - a. Yes.
 - b. No, but documentation explaining the inconsistency will be provided.
 - c. No.

VulnerabilitiesAdversary Attributes

9.
 - a. Yes.
 - b. No.

Component Protection

10.
 - a. Vehicles will be alarmed to prevent unauthorized access or removal.
 - b. Motor pool(s) will be manned and will also be protected by the detection system.
 - c. Motor pool(s) will be protected by the detection system.
 - d. The general area around the motor pool(s) will be protected by the detection system.

4.67 RoofsFUNCTION

The function of the roof will be to delay adversary access to the MAA or VA to aid detection, assessment, and response.

CONDITIONSSite Conditions

1. a. Are other structures or overhanging vegetation nearby?
b. If so, how near?
2. a. Are there any openings in the roof?
b. If so, what size are they?
3. What is the elevation of the roof?

Performance Conditions

4. What will be the materials of construction of the roof?
5. What will be the overall roof thickness?
6. a. Are there any access approaches to the roof?
b. If so, what are they?
7. Will there be blind spots on the roof?
8. Will the roof be lighted?
9. Will the roof be alarmed?
10. What will be the probable penetration time for the roof? (See Barrier Technology Handbook and other references.)
11. Will the roof employ redundant barriers and/or diverse materials to increase penetration delay?
12. Will the penetration time(s) for the roof be equivalent to that for the adjacent barriers?

VulnerabilitiesAdversary Attributes

13. What classes of tools will correspond to the above penetration time(s) for penetration of the roof?

14. What number(s) of persons carrying out the penetrations are associated with the above penetration time(s)?

ANSWERSCONDITIONSSite Conditions

1. a. (1) Yes.
(2) No.
- b. (1) Yes.
(2) No.
2. a. (1) Yes.
(2) No.
- b. (1) < 96 square inches each.
(2) > 96 square inches each.
3. a. $> 10'$ above ground.
 $\leq 10'$ above ground.

Performance Conditions

4. a. Standard reinforced concrete.
b. Expanded metal reinforced concrete.
c. Concrete tee beams.
d. Metal decking on steel joists (16-18 gage).
e. Lightweight concrete.
f. Wood.
5. a. More than 24 inches.
b. 18 to 24 inches.
c. 12 to 18 inches.
d. 8 to 12 inches.
e. 4 to 8 inches.
f. 4 inches or less.
6. a. (1) Yes.
(2) No.
- b. (1) Stairs.
(2) Ladders.
(3) Other (specify).
7. a. No.
b. Yes.
8. a. Yes.
b. No.

- 9. a. Yes.
b. No.
- 10. (Specify).
- 11. a. Yes.
b. No.
- 12. a. Yes.
b. No.

Vulnerabilities

Adversary Attributes

- 13. a. Explosives.
b. Thermal cutting tools.
c. Powered handtools.
d. Handtools.
- 14. a. 4 or more.
b. 3.
c. 2.
d. 1.

4.68 Sally Ports, PedestrianFUNCTION

The function of the pedestrian sally port will be to minimize unauthorized personnel entry into the PA, MAA, and or VA to aid detection, assessment, and response.

CONDITIONSPerformance Conditions

1. What will be the construction of the sally port walls?
2. What type of doors will be installed?
3. Will the door hinges be exposed to the outside?
4. Will the door hinge pins be removable?
5. How will the penetration resistance of the sally port compare with adjacent barriers, i.e., fences, walls?
6. Will the inner door remain locked until personnel have been screened and searched?

Vulnerabilities

7. Are there provisions made to protect against "piggybacking"?

Related Questionnaires

8. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Locks (Keyed/Keyless).

ANSWERSCONDITIONSPerformance Conditions

1.
 - a. Reinforced concrete.
 - b. Concrete block.
 - c. Hollow metal.
 - d. Wood.

2.
 - a. Heavy-duty custom.
 - b. Solid core.
 - c. Hollow core.
 - d. Structural glass.

3.
 - a. No.
 - b. Yes.

4.
 - a. No.
 - b. Yes.

5.
 - a. The sally port will be more resistant.
 - b. Both will be equal.
 - c. The sally port will be less resistant.

6.
 - a. Yes.
 - b. No.

Vulnerabilities

7.
 - a. Yes.
 - b. No.

4.69 Sally Ports, VehicularFUNCTION

The function of the vehicle sally port will be to delay unauthorized vehicle entry into the PA and to aid detection, assessment, and response.

CONDITIONSEnvironmental Conditions

1. What provisions will be made to ensure free movement of gate or gate operator mechanism under snow or ice conditions?

Performance Conditions

2. Will both the inner and outer gates be of the same penetration-resistant construction?
3. How will the penetration resistance of the sally port compare with adjacent barriers, e.g., fences?
4. What provisions will be made to ensure that the sally port gates can be opened or closed manually should the gate drive mechanism fail?
5. Will the locking device on the sally port gates be exposed to the outside?
6. Will the inner sally port gate remain locked until the vehicle and driver have been screened and searched?

Related Questionnaires

7. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Locks (Keyed/Keyless).

ANSWERSCONDITIONSEnvironmental Conditions

1. a. Such conditions are not expected to be a problem at the site, or snow or ice will be promptly removed.
- b. Conditions will be handled as they occur.

Performance Conditions

2. a. Yes.
 - b. No.
3. a. The sally port will be more resistant.
 - b. Both will be equally resistant.
 - c. The sally port will be less resistant.
4. a. The gate operator will be provided with a manually operated quick release to disconnect the drive mechanism from the motor, thus permitting manual operation. Tamper-indicating circuitry will be provided for the quick-release control.
 - b. The same as a. above but without tamper-indicating circuitry.
 - c. No provisions will be made.
5. a. The locking devices on both the inner and outer gates will not be exposed to the outside.
 - b. The locking device on the inner gate will be exposed to the outside but the device on the outer gate will not.
 - c. The locking devices on both the inner and outer gates will be exposed to the outside.
6. a. Yes.
 - b. No.

4.70 Shielding Detectors

- Volume

FUNCTION

The function of the volume shielding detector will be to detect nuclear material shielding on personnel exiting through the MAA portal.

CONDITIONS

Site Conditions

1. Will the detector be mounted in a booth or similar structure which confines personnel while they are being screened for nuclear-material shielding?
2. Will personnel being searched be free of all metallic objects normally carried in pockets, e.g., keys, coins, pocket knives?
3. Will personnel being searched be free of metal contained in clothing, e.g., belt buckles, steel-toed shoes, metal-rimmed glasses?
4. If an alarm occurs, will it be possible to reset the detector for a second scan without requiring personnel to exit and reenter?

Performance Conditions

Installation

5. Will an X-ray package search system be located near the shielding detector?
6. Will air conditioners or similar units with switches be located in the vicinity of the detectors?
7. If a weight scale is used, will the scale platform be nonmetallic?
8. Will moving metal parts from other entry-control elements within the booth, e.g., an explosives detector, cause the detector to false alarm?
9. Will other electronic equipment within the booth produce electromagnetic fields which might cause the detector to alarm?
10. If multiple booths will be used for throughput, will operation of the detector in one booth cause an alarm in another?

Operation

11. Will keyed RF transmission by guard transmission devices cause the detector to alarm?
12. Will the false alarm rate due to powerline transients be significant?
13. How uniform will detector sensitivity be over the booth volume?
14. Will only one person at a time be screened?
15. Within a 90 percent probability factor, will the detector be capable of detecting the minimum test sample (200-gram lead, right circular cylinder) located anywhere on an individual?

Maintenance

16. Will it be possible to self-test the detector remotely?
17. How often will the functional check be made?
18. If fluorescent lighting is used, will flickering fluorescent tubes be replaced promptly?
19. What means of detection will be available should the detector fail?

Vulnerabilities

20. Will the detector scan be implemented only after both doors are closed?
21. Will the volume of coverage of the detector overlap all booth volumes?
22. Will planes or contours of nonsensitivity exist within the volume of coverage of the detector?

Related Questionnaires

23. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.
2. a. Yes, lockers will be provided for storage of personal articles while personnel are in the material access area.
b. Yes, personnel will be asked to leave such articles outside material access areas.
c. No control will be exercised.
3. a. Yes, standard work clothes, free of metal, will be provided to personnel.
b. Yes, personnel will be required to obtain work clothes which will not cause the detector to alarm.
No control will be exercised.
4. a. Yes.
b. No.

Performance ConditionsInstallation

5. a. The detector will be located more than 4 metres from any X-ray conveyor.
b. The detector will be located from 2 to 4 metres from an X-ray system, but sufficient shielding will be used.
6. a. No, such units will be at least 5 metres from the detector.
b. Such units will be within 5 metres of the detector, but as much shielding as is necessary will be used.
7. a. Yes, or a weight scale will not be used.
b. No.
8. a. No.
b. Yes, but shielding will be used to eliminate those alarms.

9. a. No.
b. Yes, but shielding or filtering will be used to eliminate this type of alarm.
10. a. No, or multiple booths will not be used.
b. Yes.

Operation

11. a. Keyed RF transmission devices will not be used.
b. These devices will be used, but modulated RF at the frequency used will not cause the detector to alarm.
c. Yes, but these devices will be limited to areas where their use will not cause the detector to alarm.
12. a. No, the detector will be powered from a line that should not be subject to transients.
b. No, isolation transformers will be used to eliminate transients.
c. No protection will be provided.
13. a. Maximum variation 2 to 1.
b. Maximum variation 4 to 1.
c. Maximum variation 6 to 1 or more.
14. a. Yes.
b. No.
15. a. Yes.
b. No.

Maintenance

16. a. Yes.
b. No, but a minimum test sample (200 gm lead, right circular cylinder) will be used to verify that the sensitivity is properly adjusted.
c. No.
17. a. Once per day.
b. Every other day.
c. Once per week.
18. a. Yes, or fluorescent lighting will not be used.
b. No.

19. a. An operational spare will be available, or the detector will be one of several in use.
b. A hand-held detector will be used.
c. None.

Vulnerabilities

20. a. Yes.
b. No.
21. a. Yes.
b. No, but CCTV or direct surveillance and the location of volumes not covered will enable security to easily detect an attempt to exploit this vulnerability.
c. No.
22. a. No.
b. Yes.

4.71 Shielding Detectors

- Walk-Through

FUNCTION

The function of the walk-through shielding detector will be to detect nuclear material shielding on personnel exiting through the MAA portal.

CONDITIONS

Site Conditions

1. Will the detector be mounted in a booth or similar structure which confines personnel while they are being screened for nuclear material shielding?
2. Will personnel being searched be free of all metallic objects normally carried in pockets (keys, coins, pocket knives)?
3. Will personnel being searched be free of metal contained in clothing (belt buckles, steel-toed shoes, metal-rimmed glasses)?
4. Will an audio communication link between security and personnel being searched be provided?
5. If an alarm occurs, will it be possible to reset the detector for a second scan without requiring personnel to exit and reenter?

Performance Conditions

Installation

6. Will an X-ray package search system be located near the shielding detector?
7. Will air conditioners or similar switched units be located in the vicinity of the detector?
8. If a weight scale will be used, is the scale platform nonmetallic?
9. Will moving metal parts from other entry control elements within the booth, e.g., an explosives detector, cause metal detector false alarms?
10. Will other electronic equipment within the booth produce electromagnetic fields which might alarm the metal detector?

11. If multiple booths will be used for throughput, will operation of the detector in one booth cause an alarm in another?
12. Will the equipment be calibrated to detect a minimum of 100 grams of non-ferrous metal (shielding), with 90 percent confidence and a false alarm rate not exceeding 0.1 percent?

Operation

13. Will keyed RF transmission by guard transmission devices cause detector alarms?
14. Will the false alarm rate due to power line transients be significant?
15. How uniform will detector sensitivity be over the booth volume?
16. Will only one person at a time be screened?

Maintenance

17. Will it be possible to remotely self-test the detector?
18. How often will the functional check be made?
19. What means of detection will be available should the detector fail?

Vulnerabilities

20. Will the detector scan be implemented only after both doors are closed?
21. Will the detector's volume of coverage overlap all booth volumes?
22. Will testing be done to determine where planes or contours of no sensitivity exist within the detector's volume of coverage?

Related Questionnaires

23. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.
2. a. Yes, lockers will be provided for storage of personal articles while in the material access area.
b. Yes, personnel will be asked to leave such articles outside material access areas.
c. No control will be exercised.
3. a. Yes, standard work clothes, free of metal, will be provided to employees.
b. Yes, personnel will be required to obtain work clothes which will not alarm the detector.
c. No control will be exercised.
4. a. Yes.
b. No.
5. a. Yes.
b. No.

Performance ConditionsInstallation

6. a. The detector will be located more than 4 metres from any X-ray conveyor.
b. The detector will be located between 2 and 4 metres from an X-ray system but sufficient shielding will be used.
7. a. No, such units will be at least 5 metres from the detector.
b. Such units will be within 5 metres of the detector, but shielding will be used.
c. Such units will be within 5 metres of the detector, and shielding will not be used.

8. a. Yes, or a weight scale will not be used.
b. No.
9. a. No.
b. Yes, but shielding will be used to eliminate those alarms.
c. Yes.
10. a. No.
b. Yes, but shielding or filtering will be used to eliminate this type of alarm.
c. Yes.
11. a. No, or multiple booths will not be used.
b. Yes.
12. a. Yes.
b. No.

Performance Conditions

Operation

13. a. Keyed RF transmission devices will not be used.
b. These devices will be used, but modulated RF at the frequency used will not alarm the detector.
14. a. No, the detector will be power from a line that should not be subject to transients.
b. No, transients occur but the false alarm rate is less than 3 percent.
15. a. Maximum variation 2 to 1.
b. Maximum variation 4 to 1.
c. Maximum variation 6 to 1 or greater.
16. a. Yes.
b. No.

Maintenance

17. a. Yes.
b. No, but a minimum test sample (100 gms lead, right circular cylinder) will be used to verify that the sensitivity is properly adjusted.
c. No.
18. a. At least once per shift.
b. At least once per day.
c. At least once per week.

19. a. An operational spare will be available, or the detector will be one of several in use.
- b. A hand-held detector will be used.
- c. None.

Vulnerabilities

20. a. Yes.
- b. No.
21. a. Yes.
- b. No, but CCTV or direct surveillance and the location of the volumes not covered will enable security to easily detect an attempt to exploit this vulnerability.
- c. No.
22. a. Yes.
- b. No.

4.72 SNM Containers

FUNCTION

The function of the SNM container will be to protect SNM while in storage or transport, by providing a detection capability and delay mechanism to allow for assessment and response.

CONDITIONS

Site Conditions

1. If enriched uranium scrap contained in 30-gallon drums or larger is stored within a locked and separately fenced area, what will be the distance of the enclosure from the perimeter of the protected area?

Performance Conditions

Operation

2. Will containers containing SNM in process be uniquely identified?
3. Will records be kept of the quantity of SNM in each container?
4. Will the location of each container be recorded?
5. Will the disposition of all containers be recorded?
6. Will inventory procedures for containers provide for verification of the integrity of tamper-safing devices?
7. What will be the minimum weight of a container that can be shipped on open railroad flatcars or boxcars?

ANSWERSCONDITIONSSite Conditions

1. a. 75 feet or more, or this question will not apply.
b. From 50 to 75 feet.
c. From 25 to 50 feet.

Performance ConditionsOperation

2. a. Yes.
b. No.
3. a. Yes.
b. No.
4. a. Yes.
b. No.
5. a. Yes.
b. No.
6. a. Yes.
b. No.
7. a. 7,500 lbs.
b. 5,000 lbs.

4.73 SNM Detectors

- Hand-held Package Search

FUNCTION

The function of the search will be to detect unauthorized removal of SNM in packages exiting through an MAA portal.

CONDITIONSSite Conditions

1. Will the detector be used as an aid in a visual package search?
2. Will all packages be searched during every exit?
3. Will larger packages, whose interiors are not in the range of the detector, be opened for examination?
4. Will a hand-held metal detector be used in conjunction with the SNM detector to detect shielded nuclear materials?
5. Will packages which have been contaminated with nuclear materials be passed through the material access area exit?
6. How does the required package throughput rate compare with search procedure timing?

Performance ConditionsOperation

7. For packages which can be searched without being opened, will the detector be passed over all package surfaces?
8. Will package contents which appear to be made of shielding material be disassembled and thoroughly searched with the SNM detector?
9. Will the operator be trained in the proper use of the SNM detector?
10. How frequently will detector operation be checked by the use of a test sample?
11. For areas containing Pu or U-233, will the equipment be calibrated to detect 5 grams of plutonium or 1 gram U-233, shielded by 3mm of brass, concealed anywhere on an individual, with 90 percent confidence and a false alarm rate not exceeding 0.1 percent?

12. For areas containing highly enriched U-235, will the equipment be calibrated to detect 3 grams uranium enriched to 90 percent in the U-235 isotope in 3mm of brass, concealed anywhere on an individual, with 50 percent confidence and a false alarm rate not exceeding 0.1 percent?
13. For areas containing only fabricated, discrete items, will the equipment be calibrated to detect 30 grams U-235 in cut-up portions of the items?

Maintenance

14. Will the detector battery be checked at the beginning of each shift?
15. Will an operational spare be available in case of detector failure?

Related Questionnaires

16. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.
2. a. Yes.
b. Search will be conducted on a random basis; more than 50 percent of packages will be searched.
c. Search will be conducted on a random basis; from 10 to 50 percent of packages will be searched.
d. Search will be conducted on an occasional basis; less than 10 percent of packages will be searched.
3. a. Yes.
b. No.
4. a. Yes.
b. No.
5. a. No.
b. Yes.
6. a. Timing is such that the procedure will not be rushed.
b. Procedure may be rushed at times.

Performance ConditionsOperation

7. a. Yes, or all packages will be opened.
b. No.
8. a. Yes, unless they are tamper sealed.
b. No.
9. a. Yes, with written procedures and classroom training.
b. Yes, verbally in an informal manner.
c. No.
10. a. At least twice per day or prior to each portal operation.
b. Daily.
c. Less often than once per day.
11. a. Yes.
b. No.

12. a. Yes.
b. No.

13. a. Yes.
b. No.

Maintenance

14. a. Yes.
b. No.

15. a. Yes.
b. No.

4.74 SNM Detectors

- Hand-held Personnel Search

FUNCTION

The function of the search will be to detect unauthorized removal of SNM by personnel exiting through an MAA portal.

CONDITIONS

Site Conditions

1. Will personnel be searched on every exit?
2. Will long lines force security to hurry their search?
3. How much time will be spent in implementing the search?
4. Will the search be conducted in an area with low unvarying background radiation?
5. What procedure will be used to verify whether an alarm is false or not?

Performance Conditions

Operation

6. Will personnel be required to remove or open bulky clothing?
7. Will security personnel be trained in proper operation and search techniques?
8. How often will the background count be reset?
9. What type of alarm indicator will be used?
10. Will the monitor be passed within 0.2 metres of all body areas of personnel being searched?
11. Will all hand-carried items be examined?
12. Will a search with a hand-held metal detector be performed in conjunction with the nuclear material search, to verify that personnel are free of metallic materials which might be used to shield nuclear material?

13. For areas containing Pu or U-233, will the equipment be calibrated to detect 5 grams of plutonium or 1 gram U-233 shielded by 3mm of brass and concealed anywhere on an individual, with 90 percent confidence and a false alarm rate not exceeding 0.1 percent?
14. For areas containing highly enriched U-235, will the equipment be calibrated to detect 3 grams uranium enriched to 90 percent in the U-235 isotope in 3mm of brass and concealed anywhere on an individual, with 50 percent confidence and a false alarm rate not exceeding 0.1 percent?
15. For areas containing only fabricated, discrete items, will the equipment be calibrated to detect 30 grams U-235 as contained in cut-up portions of the item?

Maintenance

16. How often will the monitor be checked for sensitivity?
17. Will the detector battery be checked at the beginning of each shift?
18. Will an operational spare be available in case of detector failure?

Related Questionnaires

19. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. Search will be on a random basis, more than 50 percent of all personnel searched.
c. Search will be on a random basis, between 10 percent and 50 percent of all personnel searched.
d. Search will be an occasional random search, less than 10 percent of personnel searched.
2. a. No.
b. Yes.
3. a. Approximately 1 minute.
b. Approximately 30 seconds.
c. Approximately 15 seconds.
4. a. Yes.
b. No.
5. a. Personnel will be requested to remove suspect articles for visual inspection and a second monitor search will be made of persons and articles.
b. Personnel will be requested to remove suspect articles for visual inspection.

Performance ConditionsOperation

6. a. Yes.
b. No.
7. a. Yes, a course will be required to train security personnel on operation and vulnerability of the equipment as well as proper search techniques.
b. A short course on how to use the equipment will be given.
c. A demonstration will be given.
8. a. Every 15 minutes and after every alarm.
b. After every alarm.
c. When necessary.

9.
 - a. Audible threshold (trip) alarm.
 - b. Visual threshold (trip) alarm.
 - c. An audible tone whose intensity/frequency increases with signal count rate.
10.
 - a. Yes.
 - b. No.
11.
 - a. Yes, both visually and with the detector.
 - b. Yes, visual inspection.
12.
 - a. Yes.
 - b. No.
13.
 - a. Yes, or this question will not apply.
 - b. No.
14.
 - a. Yes, or this question will not apply.
 - b. No.
15.
 - a. Yes, or this question will not apply.
 - b. No.

Maintenance

16.
 - a. At least once per shift.
 - b. At least once per day.
 - c. At least once per week.
17.
 - a. Yes.
 - b. No.
18.
 - a. Yes.
 - b. No.

4.75 SNM Detectors

- Volume

FUNCTION

The function of the SNM detector will be to detect SNM being removed from the MAA through an entry control point.

CONDITIONS

Site Conditions

1. Will the detector be mounted in a booth or similar structure which will confine personnel within the detection area during the search?
2. Will the detector be located close to a source of high or variable radiation?
3. If an alarm occurs, will it be possible to reset the detector for a second scan without requiring personnel to exit and reenter?
4. Will shielding detectors be used in conjunction with the SNM detector?
5. What alternate method will be used to search personnel when an alarm occurs?

Performance Conditions

Operation

6. Will the detector be capable of detecting a malfunction in its operation?
7. Will the background update be inhibited when personnel are within the detection volume?
8. Will the detector be capable of detecting 10 grams of unshielded uranium enriched to 90 percent in the U-235 isotope, which is located anywhere on an individual, with a 60 percent probability of detection?
9. How often will the detector be tested to check basic operation?
10. How often will the detector undergo required sensitivity and false alarm tests?

Maintenance

11. What means of detection will be used if the detector fails?

Vulnerabilities

12. Will the detector be shielded so that only the detection volume contributes to the background count?

Related Questionnaires

13. For evaluation completeness, please answer the following interrelated effectiveness tests:
- a. Emergency Battery System.
 - b. Emergency Generator Systems.
 - c. Equipment Checks/Maintenance.
 - d. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.
2. a. No, the location will not affect the sensitivity or false alarm rate.
b. Yes, but the detector will be sufficiently shielded and performance will not be affected.
c. Yes.
3. a. Yes.
b. No.
4. a. Yes.
b. No.
5. a. Personnel will be requested to exit through the door entered and to proceed to a bypass portal where manual screening will be implemented by means of a hand-held detector.
b. A guard will implement a search using a hand-held detector after the individual has been released from the secured area.

Performance ConditionsOperation

6. a. Yes, the alarm will sense a decrease in detector sensitivity caused by a malfunction.
b. Yes, the alarm will sense only a complete detector failure.
c. No.
7. a. Yes.
b. No.
8. a. Yes.
b. No.
9. a. At least once per shift.
b. At least once per day.
c. At least once per week.

10. a. At least once per shift.
- b. At least once per day.
- c. At least once per week.
- d. At least once per month.
- e. At least yearly.

Maintenance

11. a. An operational spare will be available, or the detector will be one of several in use.
- b. A hand-held detector will be used.
- c. None.

Vulnerabilities

12. a. Yes.
- b. No.

4.76 SNM Detectors

- Walk-Through

FUNCTION

The function of the SNM detector will be to detect SNM being removed from the MAA by personnel through an entry control point.

CONDITIONSSite Conditions

1. Will the detector be located close to a source of high or variable radiation?
2. Will the traffic flow through the detector be slowed sufficiently to ensure adequate detectability?
3. Will shielding detectors be used in conjunction with the SNM detectors?
4. What method will be used to search personnel when an alarm occurs?

Performance ConditionsOperation

5. For areas containing PU or U-233, will the equipment be calibrated to detect 5 grams of plutonium or 1 gram of uranium-233 shielded by 3mm of brass, concealed anywhere on an individual, with 90 percent confidence and a false alarm rate not exceeding 0.1 percent?
6. For areas containing highly enriched U-235, will the equipment be calibrated to detect 10 grams uranium enriched to 90 percent in the uranium 235 isotope in 3mm of brass, concealed anywhere on an individual, with 50 percent confidence.
7. Will the detector be equipped with a high background radiation alarm?
8. Will the detector be mounted in a doorway or similar opening so that material cannot be passed around the detection area?
9. How often will the detector be tested to check basic operation?
10. How often will the monitor undergo required sensitivity and false alarm tests?

Maintenance

11. What means of detection will be used if the detector fails?

Vulnerabilities

12. Will the monitor be shielded such that only the detection area contributes to the background count?

Related Questionnaires

13. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System.
 - b. Emergency Generator Systems.
 - c. Equipment Checks/Maintenance.
 - d. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite Conditions

1. a. No, not such that the sensitivity or false alarm rate will be affected.
b. Yes, but the monitor will be sufficiently shielded so that the performance will not be affected.
c. Yes.
2. a. Yes, guard supervision will be used for this function.
b. No.
3. a. Yes, personnel will be screened by both detectors before egress will be allowed.
b. No.
4. a. The person in the detection area when the alarm occurred will be required to pass through the unit again.
b. Personnel will be searched using a hand-held nuclear monitor.

Performance ConditionsOperation

5. a. Yes, or this question will not apply.
b. No.
6. a. Yes, or this question will not apply.
b. No.
7. a. Yes, this will be set to alarm when the background becomes high enough to affect the minimum sensitivity required.
b. No, the monitor will have a detection threshold which is independent of the background count.
c. No.
8. a. Yes.
b. No.
9. a. At least once per shift.
b. At least once per day.
c. At least once per week

10. a. At least once per shift.
- b. At least once per day.
- c. At least once per week.
- d. At least once per month.
- e. At least yearly.

Maintenance

11. a. An operational spare will be available, or the detector will be one of several in use.
- b. A hand-held detector will be used.
- c. None.

Vulnerabilities

12. a. Yes.
- b. No.

4.77 SNM Holding/Storage Areas

FUNCTION

The function of the SNM holding/storage areas will be to protect SNM during periods when it is not being processed, prepared for processing, or being packaged for shipment; thus providing delay to aid detection, assessment, and response.

CONDITIONS

Site Conditions

1. Will SNM holding/storage areas be located within a protected area (PA) enclosed by at least two physical barriers?
2. Will the physical barrier for an SNM holding/storage area within the PA be separated from the barrier at the perimeter of the PA?
3. What will be the minimum distance between a storage area for enriched uranium scrap and the perimeter of the PA?

Performance Conditions

4. Unless it is undergoing processing, will SNM that can be used directly in the manufacture of a nuclear explosive device be stored in a vault?
Questions 5 through 7 refer to SNM other than alloys, fuel elements, or fuel assemblies which are not directly useable in a nuclear explosives device.
5. Will SNM holding/storage areas be constructed with barriers that will provide significant penetration delay?
6. Except when personally attended, will SNM be kept in locked compartments or locked process equipment while undergoing processing?
7. How often will a guard patrol the storage area when the area is unoccupied?

ANSWERSSite Conditions

1. a. Yes.
b. No.
2. a. Yes.
b. No.
3. a. More than 25 feet.
b. 25 feet.

Performance ConditionsOperation

4. a. Yes.
b. No.
5. a. Yes.
b. No.
6. a. Yes, all the time.
b. Yes, sometimes.
c. No.
7. a. At least once every 1/2 hour.
b. At least once every 4 hours.
c. At least once per day.

4.78 SNM Identification/Authorization ProceduresFUNCTION

The function of SNM identification/authorization procedures will be to prevent unauthorized removal of special nuclear material (SNM) from the licensee's control through deception.

CONDITIONSPerformance Conditions

1. Will the person(s) having authority for scheduling and approving removal of SNM from material access areas (MAA) be clearly identified?
2. Will delegations of removal authorization and scheduling be made in writing?
3. Will current schedules be provided to appropriate security personnel for authorized removal of SNM which clearly indicate (1) the types and quantities of SNM to be removed, (2) the time of removal, and (3) the person(s) authorized to remove the material?
4. Will containers and items containing SNM be clearly labeled as to type and quantity, be uniquely identified, and be tamper-indicating sealed?
5. Will transfer documents authorizing material removal be pre-numbered, controlled, and accounted for?
6. Will removal procedures be established by physical security to access the following information against the current authorized schedule before permitting removal?
 1. The identity of person(s) removing the material,
 2. The type and quantity of material as labeled,
 3. The time of removal.
7. By what means will the identity of person(s) removing SNM be verified?
8. Will the plant material control office be immediately notified of material removal?

Related Questionnaires

9. For evaluation completeness, please answer the interrelated effectiveness test for Personnel Identification Numbers/Passwords.

ANSWERSCONDITIONSPerformance Conditions

1. a. Yes.
b. No.
2. a. Yes.
b. No.
3. a. Yes.
b. No.
4. a. Yes.
b. No.
5. a. Yes.
b. No.
6. a. Yes.
b. No.
7. a. By positive personnel identification.
b. By video comparator personnel identification.
c. By photo ID-Badge.
8. a. Yes.
b. No.

4.79 SNM Liquid and Solid Waste Handling Procedures

FUNCTION

The function of SNM liquid and solid waste handling procedures will be to prevent significant quantities of special nuclear material (SNM) from being concealed within waste and subsequently removed from the licensee's control.

CONDITIONS

Site Conditions

1. Will areas used for preparing SNM waste for removal from a material access area (MAA) be isolated from material processing and storage areas and designated as a controlled access area?

Performance Conditions

2. At the point of collection, will SNM solid waste be segregated according to the type of assay required and packaged separately in tamper-indicating sealed containers?
3. What considerations will be given to the choice of SNM solid waste containers?
4. When contamination and health hazards are of concern, will all packages be heat-sealed in multiple transparent polyethylene bags with each heat-sealed closure of the next-to-outermost bag covered with a tamper-indicating seal?
5. If more than one seal will be used on a package, will the identification number of each seal be recorded on all other seals on that package?
6. Will each completed package be weighed individually and its weight recorded?
7. Will all SNM-contaminated liquid waste streams be monitored for excessive quantities of SNM prior to reaching retention ponds, holding tanks, etc.?
8. Before exiting an MAA, will all SNM waste containers be drum scanned or subjected to some other means of assay by at least two individuals, working and recording as a team, who have no access to material processing and storage areas?

9. At the time of assay, will all tamper-indicating seals and recorded package weight be verified?
10. What steps will be taken if an assay indicates a quantity higher than the established acceptable quantity of SNM within a waste package?
11. Immediately before loading, will each shipping container be inspected for integrity and to ensure that it is empty?
12. Will loading be conducted by at least two persons verifying the integrity of each waste package and recording all information for each waste package (seal codes, gross weight, assay values, etc.) on the shipping container manifest?
13. Immediately after being filled, will the shipping container be sealed with tamper-indicating seal(s) and its gross weight recorded?
14. Upon removal from an MAA, will portal security check the following:
 1. container integrity,
 2. seal identification numbers,
 3. manifest information,
 4. verification of transfer authorization and schedule, and
 5. identity of persons authorized to remove SNM waste?
15. Will the shipping container be quarantined and examined for diversion attempts if any of the checks in question 16 are questionable?

Related Questionnaires

16. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Multi-Man Rule.
 - b. Tamper Indicating Seals and Tamper Seal Inspection.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.

Performance Conditions

2. a. Yes.
b. No.
3. a. (1) Containers of uniform size.
(2) Container volume not more than 4 to 6 litres.
(3) Container diameter less than 15 cm.
(4) Container made of materials which provide little shielding for radiation.
(5) Container designed to clearly indicate tampering attempts to bypass seals.
b. Only (2), (4), and (5) above.
c. Only (2) and (5) above.
d. Only (2) above.
4. a. Yes.
b. No.
5. a. Yes.
b. No.
c. Only one seal will be used.
6. a. Yes.
b. No.
7. a. Yes.
b. No.
8. a. Yes.
b. No.
9. a. Yes.
b. No.

10. a. (1) A careful examination of the package and its contents will be made for indications of a diversion attempt, and
(2) Any suspicions will be reported to NRC, and
(3) If no diversion is indicated, the material will be reclaimed as scrap.
 - b. Obvious diversion attempts will be reported to NRC, otherwise the material will be reclaimed as scrap.
 - c. The material will be reclaimed as scrap.
 - d. The material will be discarded as waste because it is within pre-established discard limits.
11. a. Yes.
b. No.
 12. a. Yes.
b. No.
 13. a. Yes.
b. No.
 14. a. Yes.
b. No.
 15. a. Yes.
b. No.

4.80 SNM Scrap Removal Procedures

FUNCTION

The function of SNM scrap removal procedures will be to prevent significant quantities of special nuclear material (SNM) from being diverted as scrap and subsequently removed from the licensee's control.

CONDITIONS

Site Conditions

1. Will areas used for preparing SNM scrap for removal from a material access area (MAA) be isolated from material processing and storage areas and designated as a controlled access area?

Performance Conditions

2. At the point of generation, will SNM-bearing scrap be segregated into categories according to assay type and scrap recovery method and then packaged separately in tamper-indicating sealed primary containers?
3. What considerations will be given to the choice of SNM scrap primary containers?
4. When contamination and health hazards are of concern, will all packages be heat-sealed in multiple transparent polyethylene bags with each heat-sealed closure of the next-to-outermost bag covered with a tamper-indicating seal?
5. Where multiple seals are used on a package, will the identification number of each seal be recorded on all other seals on that package?
6. Will each completed package be weighed and its weight recorded?
7. Will SNM scrap being prepared for shipment offsite be packed and placed in tamper-indicating, sealed shipping containers while under observation of at least two individuals who shall verify and certify the contents of each shipping container through witnessing of gross weight measurements and non-destructive assay or sampling, as appropriate, of each primary container?

8. Upon removal from an MAA, will portal security check the following:
 - a. Container integrity,
 - b. Seal identification numbers,
 - c. Shipping manifest information,
 - d. Verification of transfer authorization and schedule, and
 - e. Identity of person(s) authorized to remove SNM scrap?
9. Will the shipping container be quarantined and examined for diversion attempts if any of the checks in question 10 are questionable?

Related Questionnaires

10. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Multi-Man Rule.
 - b. Tamper-Indicating Seals and Tamper Seal Inspection.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.

Performance Conditions

2. a. Yes.
b. No.
3. a. (1) Uniformity of size,
(2) Volume not more than 4 to 6 litres,
(3) Diameter less than 15 centimetres,
(4) Made of materials which provide little shielding for radiation,
and
(5) Designed to clearly indicate tampering attempts to bypass seals.
b. Only (2), (4), and (5) above.
c. Only (2) and (5) above.
d. Only (2) above.
4. a. Yes.
b. No.
5. a. Yes.
b. No.
c. Multiple seals will not be used.
6. a. Yes.
b. No.
7. a. Yes.
b. No.
8. a. Yes.
b. No.
9. a. Yes.
b. No.

4.81 SSNM Shipping/Receiving Procedures

FUNCTION

The function of strategic special nuclear material, SSNM, shipping and receiving procedures will be to permit entry and removal of only authorized and confirmed quantities and forms of SSNM from material access areas (MAA).

CONDITIONS

Site Conditions

1. Will areas used for preparing SSNM for shipment be separated from processing and storage areas and designated as controlled access areas?

Performance Conditions

2. Will SSNM being prepared for shipment offsite be packed and placed in sealed containers while under the observation of at least two individuals who shall verify and certify the contents of each shipping container through witnessing the gross weight measurements and non-destructive assay or sampling, as appropriate?
3. Will the SSNM to be shipped or received be under continuous surveillance during transfer between storage and the carrier?
4. Will Physical Security verify the authorization and scheduling of the SSNM shipment or receipt with Material Control Management prior to material transfer?
5. By what means will identity of the carrier be verified prior to permitting him access to the protected area?
6. At the time of material transfer, will the quantity and type of material listed on the label of each container be checked for agreement with the authorization for receipt or shipment, and will the seal integrity be verified?
7. Will the person(s) responsible for physical protection and for transfer of SSNM be identified clearly?
8. Will there be a sufficient number of armed security personnel and sufficient equipment at the transfer point to effectively implement proposed contingency plans?
9. How will the security personnel be assigned to the transfer point?
10. Will transfer of SSNM be acknowledged in writing by authorized personnel?

Related Questionnaires

11. For evaluation completeness, please refer to the interrelated effectiveness tests on the type of surveillance to be employed, the method used to identify the carrier, and the effectiveness test of the Multi-Man Rule.

ANSWERSCONDITIONSSite Conditions

1. Yes.
2. No.

Performance Conditions

2. a. Yes.
b. No.
3. a. Yes.
b. No.
4. a. Yes.
b. No.
5. a. By positive personnel identification.
b. By video comparator personnel identification.
c. By photo ID badge.
6. a. Yes.
b. No.
7. a. Yes.
b. No.
8. a. Yes.
b. No.
9. a. They will be assigned randomly shortly before the scheduled transfer.
b. They will be assigned randomly at the beginning of the work shift.
c. The duty assignments will be made on the basis of availability.
d. The duty assignments will be made for long periods of time.
10. a. Yes.
b. No.

4.82 Tamper-Indicating Circuitry

FUNCTION

The function of the tamper-indicating circuitry will be to detect malfunctioning equipment or signal lines and attempts to compromise security data of equipment.

CONDITIONS

Site Conditions

1. Will signal lines be located within a secured area?
2. What type of line supervision will be used?

Installation

3. How will signal lines be installed?
4. What form of tamper protection is provided?

Operation

5. How frequently will line and security equipment integrity be checked?
6. Will all tamper-indicating circuits produce tamper alarms when in either the access or secure mode?
7. Will tamper indicators be separated from regular alarms?
8. How often will operational tests be conducted on this circuitry?

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No, but the type of supervision and the method of installation used will take this into consideration/
c. No.
2. a. Random encoding or authentication with changing random key.
b. Authentication without changing random key or some other means of dynamic supervision.
c. Static coding or modulation.
d. AC or DC.

Performance ConditionsInstallation

3. a. In conduit buried in concrete.
b. In conduit buried in earth.
c. Buried in earth.
d. In conduit exposed on buildings or poles.
e. Exposed on buildings or poles.
4. a. Line supervision, enclosure tamper switches, and circuit self-testing are all provided when applicable.
b. Line supervision and enclosure tamper switches are provided.
c. Tamper protection is not provided.

Operation

5. a. More often than twice per second.
b. Once or twice per second.
c. Once every 1 to 5 seconds.
d. Once per minute.
e. Once per hour.
f. Less than once per hour.
6. a. Yes.
b. No.

7.
 - a. Yes.
 - b. No.

8.
 - a. More than once per day.
 - b. Daily.
 - c. Weekly.
 - d. Monthly.
 - e. Less than once per month.

4.83 Tamper-Indicating Seals and Tamper Seal Inspections

FUNCTION

The function of the seals and inspection procedures will be to ensure the integrity of SNM and contaminated waste containers and vaults.

CONDITIONS

1. Will the tamper-indicating seal be an approved type, e.g., pressure sensitive, padlock, or type E?
2. Will the containment vessel be designed to preclude access unless the seal(s) or part(s) of the containment indicates tampering?
3. What control measures will be taken to maintain accountability of tamper-indicating seals prior to and after use?
4. What provisions will be taken to prevent unauthorized procurement of duplicate seals?
5. Will all tamper-indicating seals be applied in the presence of at least two individuals who have witnessed the gross weight measurements and assay and can certify the contents of each SSNM container and verify, through inspection, the integrity of the seals and associated seal record?
6. After drum scanning, will containers of contaminated waste be tamper-sealed by at least two individuals, working and recording as a team, who do not have access to material processing and storage areas?
7. How often will tamper-indicating seals be inspected?
8. What corrective steps will be taken if, during an inspection, a seal is found to be damaged, broken, missing, improperly applied, or to have a serial number discrepancy?
9. Within what time period will removed tamper-indicating seals be returned to the seal custodian for subsequent examination, if required, and proper disposal?

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.
2. a. Yes.
b. No.
3. a. A seal custodian will be designated by Material Control and Accounting (MC&A) management to keep records of all tamper-indicating seals received from the manufacturer, issued for authorized use, and returned for disposal.
b. Each organization will maintain its own records for tamper-indicating seals.
c. Individual users will "log in" the disposition of the seals they use.
d. None.
4. a. Tooling or plates for seals will be kept in a secured location at the facility, under control of the MC&A management, and will be released only to the seal manufacturer to fill an order for seals.
b. The seal manufacturer will verify authenticity of all orders and provide internal controls to prevent unauthorized manufacture of seals.
c. None.
5. a. Yes, or this question does not apply.
b. No.
6. a. Yes, or this question does not apply.
b. No.
7. a. Every 4 hours or less.
b. Every 4 to 8 hours.
c. Every 8 to 24 hours.
d. Greater than every 24 hours.
e. Only during an audit if the containers are sealed and stored within a sealed storage area.

8. a. (1) Constant visual surveillance will be maintained until the container can be properly resealed.
(2) Appropriate investigative action will be taken to determine cause, and
(3) The integrity of the contents will be verified prior to resealing, and
(4) A complete report will be made to the MC&A management.
- b. Items (1), (2), and (3) above.
- c. Items (2) and (3) above.
- d. Item (3) above.
9. a. Within 4 hours.
b. Within 4 to 8 hours.
c. Within 8 to 24 hours.
d. Greater than 24 hours.

4.84 Team ZoningFUNCTION

The function of team zoning will be to minimize collusion by establishing work rules so that the same pair of employees will be limited to working together only in one zone or only on one type of safeguards system.

CONDITIONS

1. Will work rules be established to limit the work areas and/or functional areas in which the same two men can work as a team?
2. Will individuals be permitted to rotate to duties involving other teams?
3. Will other components designed to minimize collusion be used to supplement team zoning?
4. How extensively will team zoning be used within the safeguards system?

ANSWERSCONDITIONS

1.
 - a. An individual who works as a member of a team in one area or functional zone will not be permitted to work in other zones.
 - b. An individual will be permitted to work as a member of a team in more than one zone if he works with a different team member.
 - c. The same team will be permitted to work in multiple zones, but at no time will be permitted to have access to or exercise control over the entire safeguards system.
2.
 - a. Rotation will not be permitted.
 - b. Limited rotation will be permitted only if the same two team members do not have access to or exercise control over the entire safeguards system.
 - c. Rotation is permitted on a case-by-case basis.
3.
 - a. Complementary components will be used in conjunction with team zoning to reinforce collusion protection procedures.
 - b. Portions of the safeguards system, where team zoning is not employed, will be provided with collusion protection by other means.
4.
 - a. The team zoning concept will be used throughout the safeguards system.
 - b. The team zoning will be used where it may be applied easily.
 - c. Some other component will be used to minimize collusion.

4.85 Uninterruptible Power Systems (UPS)FUNCTION

The function of the UPS will be to provide sufficient continuous AC power for physical protection systems used in detection, alarm transmission, and assessment.

CONDITIONSSite Conditions

1. Will the UPS be located within a protected area?

Environmental Conditions

2. Will there be environmental conditions which will be detrimental to UPS operation?

Performance Conditions

3. In the event of a commercial (or normal) power failure, will the UPS carry the design load until input power can be restored?
4. If the UPS cannot carry the load until normal power restoration, how will the load be handled until power returns?
5. What critical operating conditions of the UPS will be monitored?
6. How often will the UPS be functionally tested by turning off the breaker which feeds it?
7. Will preventive maintenance be performed on a schedule supported by mean-time-between-failure (MTBF) data?
8. What type of UPS system will be used?
9. Will the speed of the UPS transfer switch be compatible with all the components that make up the design load?
10. Will adequate backup be provided for those components that are adversely affected by a slow transfer switch?

11. If routine maintenance-free batteries are used for energy storage, how often will they be replaced?

Vulnerabilities

12. What security will be provided for the UPS?

Related Questionnaires

13. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Equipment Checks/Maintenance.
 - b. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.

Environmental Conditions

2. a. No, the environment will be controlled.
b. Yes, there will be temperature extremes; the environment will be partly controlled.
c. Yes, there will be temperature extremes, air contamination, dust, moisture, etc.; the environment will not be controlled.

Performance Conditions

3. a. Yes.
b. No.
4. a. By emergency generator with automatic transfer switch, or the UPS can carry the load until normal power restoration.
b. By emergency generator with manual transfer switch.
c. By other alternate ac power.
5. a. Inverter overloaded, reverse transfer, ac input, and low battery or energy storage.
b. Reverse transfer, ac input, and low battery or energy storage.
c. Reverse transfer and ac input.
d. None.
6. a. Approximately once per week.
b. Approximately once per month.
c. Approximately once every six months.
d. Approximately once per year.
7. a. Yes.
b. No.

8.
 - a. Reverse transfer mode.
 - b. Continuous mode.
 - c. Forward transfer mode.
9.
 - a. Yes, or no transfer.
 - b. No.
10.
 - a. Yes.
 - b. No.
11.
 - a. Every 2 years.
 - b. Every 3 years.
 - c. Every 4 years.
 - d. Replaced upon failure.

Vulnerabilities

12.
 - a. Security patrols, locked buildings or cabinets, space and tamper alarms.
 - b. Security patrols, space and tamper alarms.
 - c. Security patrols and tamper alarms.
 - d. Tamper alarms.
 - e. None.

4.86 VaultsFUNCTION

The function of the vault will be to protect SNM during periods when it is not being processed or packaged for shipment by delaying adversary access to aid detection, assessment, and response.

CONDITIONSSite Conditions

1. Will strategic special nuclear material (SSNM) which has not been alloyed or encapsulated and which can be used directly in the manufacture of a nuclear explosive device always be stored in the vault when not undergoing processing?
2. a. Will the vault have any openings such as air or utility ducts?
b. If so, what size?
3. Where is the vault located?

Performance Conditions

4. Will the vault floor rest on grade or above grade?
5. What is the material of construction?
6. What type of reinforcement beyond normal wall construction is used?
7. Will the vault be alarmed?
8. Who is notified of the opening of an unoccupied vault containing SSNM which has not been alloyed or encapsulated?
9. Will this vault employ redundant barriers and/or diverse materials to increase delay?
10. What will be the probable penetration times for the vault?
11. Are the penetration time(s) for all component parts (floor, ceiling, walls, locks, hinges, doors) of the vault equivalent?

Vulnerabilities

12. What classes of tools will correspond to the above penetration time(s) for penetration of the vault?
13. What number of person(s) carrying out the penetrations are associated with the above penetration time(s)?

ANSWERSCONDITIONSSite Conditions

1. a. Yes, always.
b. No, but exceptions will be infrequent.
2. a. (1) Yes.
(2) No.
b. (1) < 96 square inches each.
(2) > 96 square inches each.
3. a. Not against an exterior wall.
b. Against an exterior wall.

Performance Conditions

4. a. Below grade.
b. On grade.
c. Above grade.
5. a. Steel \geq 1/2" thick.
b. Reinforced concrete \geq 8" thick.
c. 8" thick cinder block with rebar and filled cells.
6. a. Rebar grid (specify).
b. Expanded metal mesh (specify).
c. Steel plate (specify).
7. a. Yes.
b. No.
8. a. Both alarm stations will monitor the vault by means of closed circuit television, and at least one individual other than the alarm station operator will be present at the opening.
b. Both alarm stations will monitor the vault by means of closed circuit television, and at least one individual other than the alarm station operator will have knowledge of the opening.
9. a. Yes.
b. No.

10. (Specify).

- 11. a. Yes.
- b. No.

Vulnerabilities

- 12. a. Explosives.
 - b. Thermal cutting tools.
 - c. Powered handtools.
 - d. Handtools.
-
- 13. a. 5 or more.
 - b. 4.
 - c. 3.
 - d. 2.
 - e. 1.

4.87 Vibration Sensors

FUNCTION

The function of the vibration sensor will be to detect penetration attempts through the walls, floors, ceilings, and other non-portal entries into a room or building.

CONDITIONS

Environmental Conditions

1. If environmental conditions which could produce vibrations, e.g., high winds, thunderstorms, etc., are expected to occur at least five percent of the time, what provisions will be made to reduce the false alarm rate under these conditions?
2. If manmade conditions which could produce vibrations, e.g., moving machinery, heating/air cooling noise are expected to occur, what provisions will be made to reduce the false alarm rate due to these conditions?

Performance Conditions

Installation

3. What method will be used to install the sensor?
4. Will the sensor be mounted with its axis of maximum sensitivity perpendicular to the acoustical waves which may be generated by the penetration attempt?
5. In what manner will the sensor cable be attached to the structure, e.g., wall?

Maintenance

6. How will maintenance be performed to ensure that the system performs as originally intended?

Reliability

7. If the sensor has a self-test capability, what will be the test frequency?
8. How often will the sensor system be subjected to a full operational test?

Vulnerabilities

9. Will the installation of the sensor system make access to it by an adversary difficult?

Related Questionnaires

10. For evaluation completeness, please answer the following interrelated effectiveness tests:
 - a. Emergency Battery System.
 - b. Emergency Generator Systems.
 - c. Equipment Checks/Maintenance.
 - d. Tamper-Indicating Circuitry.

ANSWERSCONDITIONSEnvironmental Conditions

1. a. Environmental conditions which could produce vibrations are expected to occur infrequently, or another type of sensor will be used to detect penetration attempts when these conditions are present.
b. Sensor sensitivity will be reduced.
c. No provisions will be made to reduce the false alarm rate.
2. a. Manmade conditions which could produce vibrations are expected to occur infrequently, or the structure, e.g., wall, will be constructed of rigid materials to minimize vibration in the structure due to these conditions.
b. Sensor sensitivity will be reduced.
c. No provisions will be made to reduce the false alarm rate.

Performance ConditionsInstallation

3. a. The sensor will be installed directly inside the structure.
b. The sensor will be installed on the structure with some type of adhesive.
c. The sensor will be installed on the structure with some type of mounting brackets.
4. a. yes.
b. No.
5. a. The sensor cable will be attached in conduit imbedded in the structure.
b. The sensor cable will be imbedded in the structure without conduit.
c. The sensor cable will be attached in conduit to the structure.
d. The sensor cable will be attached to the structure with some type of staple or adhesive.

Maintenance

6. a. Maintenance will be performed on a routine preventive basis which will usually be less than the mean-time-between-failure (MTBF) of the model.
- b. Maintenance will be performed only when a failure occurs; standby replacement equipment will be immediately installed by onsite personnel.
- c. Maintenance will be performed only when a failure occurs; the equipment will be removed and replaced as soon as offsite repairs are made.

Reliability

7. a. At less than 30-second intervals.
 - b. At 30- to 60-second intervals.
 - c. At 1- to 5-minute intervals.
8. a. At least once every guard shift.
 - b. At the beginning and end of any period that it is used but not less frequently than once every seven days.

Vulnerabilities

9. a. Yes, the entire sensor system will be enclosed in conduit inside the wall, floor and/or ceiling.
- b. Yes, the signal lines to the sensor system will be enclosed in conduit.
- c. No, the sensor system will be open to an adversary should he gain entry to the room or building.

4.88 Visual Inspection

- Package Search

FUNCTION

The functions of the visual inspection search will be to detect contraband introduced in packages at the PA, MAA, and/or VA entry control points.

CONDITIONSPerformance Conditions

1. Will all packages be searched during every entrance or exit?
2. Will large packages and contents be searched as thoroughly as smaller packages and contents?
3. How will the required package throughput compare with search procedure timing?
4. Will guards be trained in bomb and bomb package recognition?
5. Will guards be trained in weapon recognition?
6. Will guards be trained to recognize forms of nuclear material and nuclear material shielding that might be used at the facility?
7. Will written procedures be established for actions to be taken by guards when suspect packages or contraband in packages are detected?
8. Will search procedure requirements at entrance and exit gates be directed toward the specific contraband expected to pass?
9. Will all packages be completely opened and contents removed at every entrance and exit?
10. Will package contents be completely unwrapped and examined in detail?
11. Will packing materials be thoroughly examined?
12. Will guards be instructed not to touch suspect packages?
13. Will guards document the external markings, characteristics, and concealment details of suspect packages?
14. Will tests be performed to check guard performance?

ANSWERSCONDITIONSPerformance Conditions

1. a. Yes.
b. Search will be conducted on a random basis, with more than 50 percent of packages searched.
c. Search will be conducted on a random basis, with between 10 and 50 percent of packages searched.
d. Search will be conducted on an occasional basis, with less than 10 percent of packages searched.
2. a. Yes.
b. Search will be less detailed than for smaller hand-held packages and contents.
c. Only an external search will be made of large packages.
3. a. No problem is expected in handling the normal amount of package throughput.
b. At various times (shift changes, etc.), guards might be rushed in their package inspection, but an adequate inspection will be made.
c. Guards will probably have to rush their inspection more than 50 percent of the time.
4. a. Yes.
b. They will be trained in external package recognition points only.
c. They will be trained in device recognition points only.
d. No.
5. a. Yes.
b. No.
6. a. Yes.
b. No.
7. a. Yes.
b. No.
8. a. General search will be directed toward all types of contraband and unusual items and configurations.
b. Search will be directed toward specific contraband expected to pass the gate.
c. No specific contraband will be designated.

9.
 - a. Yes.
 - b. No, but all those which may be easily opened in a nondestructive manner will be opened.
 - c. No, but all suspicious packages will be opened.
10.
 - a. Yes, for all packages.
 - b. Yes, for all packages opened.
 - c. No.
11.
 - a. Yes, in all packages opened, packing will be removed and searched in detail.
 - b. Packing will be sorted through within the package.
 - c. No.
12.
 - a. Yes.
 - b. No.
13.
 - a. Yes, both in writing and photographically.
 - b. Yes, photographically only.
 - c. Yes, writing only.
 - d. No.
14.
 - a. Randomly once each week.
 - b. Randomly once each month.
 - c. Less often than once each month.

4.89 Visual Inspection

- Vehicle Search

FUNCTION

The function of the visual inspection search will be to detect contraband introduced in vehicles at a PA entry point.

CONDITIONSPerformance Conditions

1. Will the vehicle driver and passengers be isolated in a separate area while the vehicle search is implemented?
2. What means will be used to search and identify the driver and passengers?
3. Will cargo being carried with the vehicle be opened and contents examined for contraband?
4. Will vehicle inspectors be trained in what to look for on a vehicle search, particularly as regards explosive devices?
5. Will the vehicle be driven on a ramp or similar structure so that undercarriage, wheel, wells, etc., can be searched effectively?
6. Will lifts, ladders, etc., be available to facilitate inspection of larger vehicles?
7. If a team of inspectors is to be used, will responsibilities be clearly defined so that all areas of the vehicle are thoroughly searched?
8. If a vehicle is of the type which cannot be adequately searched, will it be placed under security escort while in the protected area?
9. Will upholstery be examined for alteration or repair that might indicate explosive or weapon concealment?
10. Will all areas in glove compartments, under the dash, under seats, and behind seats be examined?
11. Will door panels be examined for evidence of tampering?
12. When the undercarriage is examined, will areas not in direct view be inspected?

13. Will the hood area be examined?
14. Will air intake covers and other similarly usable concealment areas be examined?
15. If the vehicle has a trunk, will it be opened and searched?
16. Will trunk contents be individually opened and searched?
17. Will the gas tank cap be removed and the gas inlet tube examined?

ANSWERSCONDITIONSPerformance Conditions

1. a. Yes.
b. No.
2. a. If the driver or passengers are authorized entry into the protected area, they will utilize the same entry facilities as other personnel.
b. Alternate search and identification methods will be used which are somewhat less effective than implemented on other personnel.
c. Photo identification will be used but no contraband search will be made.
3. a. Vehicles with cargo will leave their loads at a loading dock or similar facility for examination and will not enter the protected area perimeter.
b. All cargo will not be examined in every case, but when cargo is not examined, a security escort will be assigned to the vehicle.
c. Cargo on vehicles will not be examined on entry into the protected area.
4. a. Inspectors will be required to attend a training course on the subject.
b. Inspectors will be required to view a filmed documentary on the subject.
c. Written material will be provided to inspectors.
d. No training will be provided.
5. a. Yes.
b. No.
6. a. Yes.
b. No.
c. A team of inspectors will not be used.
7. a. Yes.
b. No.
8. a. Yes.
b. No.
9. a. Yes.
b. No.

10. a. Yes.
b. No.
11. a. Yes.
b. No.
12. a. Yes, mirrors will be used when applicable; if not, areas will be searched by feel.
b. Yes, areas will be searched by feel.
c. No, such areas are not examined.
13. a. Yes.
b. No.
14. a. Yes.
b. No.
15. a. Yes.
b. No.
16. a. Yes.
b. No.
17. a. Yes.
b. No.

4.90 WallsFUNCTION

The function of the wall will be to provide delay to aid detection, delay, and response at MAAs or VAs (the effectiveness test for vault walls is considered in a separate section for vaults).

CONDITIONSSite Conditions

1. a. Are there any openings in the wall?
b. If so, what sizes are they?
2. If the wall is an exterior wall, will there be natural features or vegetation, etc., near the wall which might interfere with detection or assessment?
3. Will culvert under the wall have grills or other barriers installed that will adequately delay entry or exit?

Performance Conditions

4. a. What will be the height of the wall?
b. What will be the thickness of the wall?
5. What is the material of construction for the wall?
6. If the wall is an exterior wall, will blind spots exist along the wall?
7. If the wall is an exterior wall, will the wall be clearly lighted?
8. If the wall is an exterior wall, what is the minimum separation distance from any other physical barrier?
9. Will there be vehicle barriers in conjunction to the wall?
10. Will the wall employ redundant barriers and/or diverse materials to increase delay?
11. What will be the total penetration time for the wall? See Sandia Barrier Handbook for assistance for calculating this time.
12. Will the wall surface be protected by intrusion alarms to detect adversary penetration?

VulnerabilitiesAdversary Attributes

13. What classes of tools correspond to the above penetration time(s) for penetration of the wall?
14. What number(s) of persons carrying out the penetrations are associated with the above penetration times?

ANSWERSCONDITIONSSite Conditions

1. a. (1) Yes.
(2) No.
- b. (1) <96 sq. in.
(2) >96 sq. in.
2. a. Yes.
b. No.
3. a. Yes.
b. No.
4. a. (1) >8 ft.
(2) <8 ft.
- b. (1) >2 ft.
(2) <2 ft. but >1ft.
(3) <12" but >8".
(4) <8" but >4".
(5) <4".
5. a. Standard reinforced concrete.
b. Expanded metal reinforced concrete.
c. Precast concrete tee sections.
d. Fibrous concrete.
e. Cinderblock.
f. Metal.
g. Wood frame.
6. a. Yes.
b. No.
7. a. Yes.
b. No.
8. a. > 100 ft.
b. 50 - 100 ft.
c. 25 - 50 ft.
d. <25 ft.
9. a. Yes.
b. No.
10. a. Yes.
b. No.

11. (Specify).

12. a. Yes.
b. No.

Vulnerabilities

Adversary Attributes

13. a. Vehicles as rams.
b. Explosives.
c. Thermal cutting tools.
d. Powered handtools.
e. Handtools.
14. a. 5 or more.
b. 5.
c. 3.
d. 2.
e. 1.

4.91 Weapons

- Handguns
- Semiautomatics
- Shotguns

FUNCTION

The function of the weapons is to provide a means of protecting and defending a facility and/or members of the guard force against adversary attack.

CONDITIONS

Performance Conditions

Operation

1. Will the weapons provided for use be in accordance with 10 CFR 73, Appendix B, Section V?
2. In what way will it be assured that the weapons will be readily available to guard force personnel?
3. Will the appropriate types and quantities of ammunition be available to support the weapons to be utilized at the facility?
4. Will personnel who might require the use of firearms in the execution of their assigned duties be qualified and requalified in accordance with 10 CFR 73, Appendix B, Section IV?

Maintenance

5. How often will preventive maintenance on weapons be performed?
6. Who will be responsible for performing preventive maintenance on the weapons?

Reliability

7. How often will the weapons be tested?

Vulnerabilities

8. Will storage areas for weapons and ammunition be located in several different locations in the facility?
9. How will weapons and ammunition be adequately protected against unauthorized removal from designated storage areas?

ANSWERSCONDITIONSPerformance ConditionsOperation

1. a. Yes.
b. No, but documentation supporting exceptions to the requirements of 10 CFR 73, Appendix B, Section V, will be provided.
c. No.
2. a. Guard force personnel will carry a handgun at all times. Other weapons and ammunition will be kept in different storage areas conveniently located near alarm stations and guard patrol points.
b. Guard force personnel will carry a handgun at all times. Other weapons and ammunition will be kept in a centrally located storage area.
c. All weapons will be kept in a designated storage area.
3. a. Yes.
b. Yes, ammunition will be available but not readily accessible.
c. No.
4. a. Yes.
b. No, but documentation supporting any exception to the requirements will be provided.
c. No.

Maintenance

5. a. Preventive maintenance will be performed on a routine basis.
b. Preventive maintenance will be performed whenever guards are retrained and requalified.
c. Maintenance will be performed only when the weapon fails during a drill or during training.
6. a. The guard to whom the handgun is issued will be responsible for preventive maintenance. All other weapons will be the responsibility of the person assigned to this task.

- b. Preventive maintenance of all weapons will be the responsibility of the person assigned to this task.
- c. This responsibility will not be assigned to anyone.

Reliability

- 7. a. All weapons will be tested on a routine basis.
- b. The weapons will be tested only when they are used for retraining and requalification.

Vulnerabilities

- 8. a. There will be several storage areas located at different locations in the facility.
- b. There will be several storage areas all located in one area.
- c. There will be one storage area in the facility.
- 9. a. Storage area(s) will be manned and will also be protected by the detection system.
- b. Storage area(s) will be protected by the detection system.
- c. The general area around the storage area(s) will be protected by the detection system.

4.92 Weapons Detector

- Hand-held Package Search

FUNCTION

The function of the search will be to detect weapons being introduced in packages through the PA, MAA, or VA entry point.

CONDITIONSPerformance ConditionsOperation

1. In essence, will the detector be used as an aid in a visual package search procedure?
2. Will all packages be searched on every entrance or exit?
3. Will larger packages, whose interiors are not within the range of the detector, be opened for examination?
4. Will required package throughput force the speed of search procedures to increase?
5. What procedure will be used when an alarm occurs?
6. Will the detector be calibrated to detect a minimum of 200 grams of non-ferrous metal located anywhere on an individual with 90 percent confidence and a false alarm rate not exceeding 1 percent?
7. For packages which can be searched without opening, will the detector sensor element be passed over all package surfaces?
8. Will contents of large packages be opened, and disassembled if necessary, so that metal detector or visual examination can be used to detect contraband?
9. How frequently will detector operation be checked using a test samp-

Maintenance

10. If the detector power source is rechargeable, will a regular charging cycle be followed?

11. Will an operational spare be available in case of detector failure?

Related Questionnaires

12. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSPerformance ConditionsOperation

1. a. Yes.
b. No.
2. a. Yes.
b. Search will be on a random basis; more than 50 percent of packages will be searched.
c. Search will be on a random basis; between 10 percent and 50 percent of packages will be searched.
d. Search will be occasional and random; less than 10 percent of packages will be searched.
3. a. Yes.
b. Sometimes, depending on the package.
c. No.
4. a. No.
b. Yes.
5. a. Package will be opened and visual examination will be used to verify the nature of the alarm.
b. Suspect packages will be examined by X-ray.
6. a. Yes.
b. No.
7. a. Yes.
b. No.
8. a. Yes.
b. No.
9. a. At least once per shift.
b. At least once per day.
c. At least once per week.

Maintenance

10. a. Yes, or the power source will not be rechargeable and a regular replacement schedule will be followed.
 - b. No.
 - c. The power source will not be rechargeable.
11. a. Yes.
 - b. No.

4.93 Weapons Detector

- Hand-held Personnel Search

FUNCTION

The function of the search will be to detect weapons being introduced by personnel at PA, MAA or VA entry points.

CONDITIONSPerformance ConditionsOperation

1. Will all personnel be searched on every entrance and exit?
2. Will long lines force security to hurry their search?
3. Will personnel be free of all metallic objects normally carried in pockets (keys, coins, pocket knives)?
4. Will personnel who pass through the detector be free of metal contained in clothing (belt buckles, steel-toed shoes)?
5. What procedures will be used to verify whether or not an alarm is false?
6. Will the equipment be calibrated to detect a minimum of 20 grams of non-ferrous metal located anywhere on an individual with 90 percent confidence and a false alarm rate not exceeding 1 percent?
7. Will the equipment be capable of discriminating between typical firearm and non-firearm masses of metal?
8. Will personnel be asked to remove hats, open coats, etc., for inspections?
9. Will the detector sensing element be passed between the arm and body on each side?
10. Will the detector sensing element be passed over all areas of the back?
11. Will the detector sensing element be passed along both sides of the leg?
12. Will the detector sensing element be passed over the shoe area?
13. Will the detector sensing element be passed over all pocket areas?
14. Will all hand-carried items be examined?

15. How frequently will a test sample be used to verify correct detector operation?

Maintenance

16. If the detector power source is rechargeable, will a regular charging cycle be followed?
17. Will an operational spare be available in case of detector failure?

Related Questionnaires

18. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSPerformance ConditionsOperation

1. a. Yes.
b. Search will be on a random basis; more than 50 percent of all personnel will be searched.
c. Search will be on a random basis; between 10 percent and 50 percent of all personnel will be searched.
d. Search will be occasional and random; less than 10 percent of personnel will be searched.
2. a. No.
b. Yes.
3. a. Yes, lockers will be provided for storage of personal articles outside the area.
b. Generally yes, personnel will be urged to leave such articles outside.
c. No control will be exercised.
4. a. Yes, standard work clothes, free of metal, will be provided for employees.
b. Yes, personnel will be required to obtain work clothes which will not alarm the detector.
c. No control will be exercised.
5. a. Personnel will be requested to remove the suspect article or articles for visual examination, and a second metal detector search of the person will be made.
b. Personnel will be requested to remove the suspect article or articles for visual examination.
6. a. Yes.
b. No.
7. a. Yes.
b. No.

8. a. Hats and coats will not be allowed in the area.
b. Yes.
c. No.
9. a. Yes.
b. No.
10. a. Yes.
b. No.
11. a. Yes.
b. No.
12. a. Yes.
b. No.
13. a. Yes.
b. No.
14. a. Yes, both visually and using the detector.
b. Yes, visual inspection.
c. No examination will be made.
15. a. At least twice each day.
b. Daily.
c. Once each week.

Maintenance

16. a. Yes, or the power source will not be rechargeable and a regular charging cycle will be followed.
b. No.
c. The power source will not be rechargeable.
17. a. Yes.
b. No.

4.94 Weapons Detector

- Volume

FUNCTION

The function of the weapons detector will be to detect weapons being introduced at PA, MAA, or VA entry points.

CONDITIONSSite Conditions

1. Will the detector be mounted in a booth or similar structure which will confine personnel during the weapons search?
2. If an alarm occurs, will it be possible to reset the detector for a second scan without requiring personnel to exit and reenter?
3. If an alarm cannot be resolved by CCTV, audio assessment, or detector reset, what alternate method will be used?

Performance ConditionsInstallation

4. Will an X-ray package search system be located near the weapons detector?
5. If a weight scale is used, will the scale platform be non-metallic?
6. If booth entrance and exit doors are metallic, will they be securely positioned during the detector scan to prevent false alarms?
7. Will moving metal parts from other entry control elements within the booth, e.g., an explosives detector, cause the metal detector to false alarm?
8. Will other electronic equipment within the booth produce electromagnetic fields which might cause the metal detector to alarm?
9. If multiple booths are used to increase throughput, will operation of the detector in one booth cause an alarm in another?

Operation

10. Will personnel be urged not to carry or wear metallic articles that may cause a detector to alarm?

11. Will keyed RF transmission by guard communication devices cause detector alarms
12. Will the false alarm rate of the detector due to powerline transients be significant?
13. How uniform will detector sensitivity be over the booth volume?
14. Will only one person at a time be screened?

Maintenance

15. Will it be possible to remotely self-test the detector?
16. How often will the functional check be made?
17. If fluorescent lighting is used, will flickering fluorescent tubes be promptly replaced?
18. What means of detection will be available should the detector fail?

Vulnerabilities

19. Will the detector scan be implemented only after both doors are closed?
20. Will the detector's volume of coverage overlap all booth volumes?
21. Will planes or contours of no sensitivity exist within the detector's volume of coverage?

Related Questionnaires

22. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSSite Conditions

1. a. Yes.
b. No.
2. a. Yes.
b. No.
3. a. Personnel will be requested to proceed to a bypass portal where they will be manually screened with a hand-held detector
b. Using a hand-held detector, a guard will implement a search after the individual has been admitted into the secured area.

Performance ConditionsInstallation

4. a. The detector will be located more than 2 metres from any X-ray conveyor.
b. The detector will be located 1 to 2 metres from an X-ray system, but sufficient shielding will be used.
5. a. Yes, or a weight scale will not be used.
b. No.
6. a. Yes, or this question will not apply.
b. No.
7. a. No.
b. Yes, but shielding will be used to eliminate those alarms.
c. Yes, equipment sensitivity will be reduced to eliminate those alarms.
8. a. No.
b. Yes, but shielding or filtering will be used to eliminate those alarms.
c. Yes, equipment sensitivity will be reduced to eliminate those alarms.
9. a. No, or multiple booths will not be used.
b. Yes.

Operation

10.
 - a. Personnel will be required to be free of all metallic articles.
 - b. Yes, personnel will be requested not to carry articles which continuously cause alarms.
 - c. No, personnel will be expected to adapt naturally.
11.
 - a. Keyed RF transmission devices will not be used.
 - b. These devices will be used, but modulated RF at the frequency being used will not alarm the detector.
 - c. Yes, but these devices will be limited to areas where use will not cause the detector to alarm.
12.
 - a. No, the detector will be powered from a line that should not be subject to transients.
 - b. No, isolation transformers will be used to eliminate transients.
 - c. No protection will be provided.
13.
 - a. Maximum variation 2 to 1.
 - b. Maximum variation 4 to 1.
 - c. Maximum variation 6 to 1 or greater.
14.
 - a. Yes.
 - b. No.

Maintenance

15.
 - a. Yes.
 - b. No, but a minimum test weapon will be used to verify operation.
 - c. No.
16.
 - a. At least once per shift.
 - b. At least once per day.
 - c. At least once per week.
17.
 - a. Yes, or fluorescent lighting will not be used.
 - b. No.
18.
 - a. An operational spare will be available, or the detector will be one of several in use.
 - b. A hand-held detector will be used.
 - c. A pat-down search will be performed.
 - d. None.

Vulnerabilities

19. a. Yes.
b. No.
20. a. Yes.
b. No, but CCTV or direct surveillance and knowing the location of the volumes not covered will enable security to easily detect an attempt to exploit this vulnerability.
c. No.
21. a. No.
b. Yes.

4.95 Weapons Detector

- Walk-Through

FUNCTION

The function of the weapons detector will be to detect weapons being introduced by personnel at a PA, MAA, or VA entry point.

CONDITIONSEnvironmental Conditions

1. Will the detector be located in a controlled environment?

Performance ConditionsInstallation

2. Will the detector be located near an X-ray conveyor?
3. Will the detector be located near metal doors or metal cabinets?
4. Will the detector be mounted in a doorway or similar opening for entrance or exit, and will the detector be mounted so that material cannot be passed around it?

Operation

5. Will the equipment be calibrated to detect a minimum of 200 grams of non-ferrous metal located anywhere on an individual with 90 percent confidence and false alarm rate not exceeding 1 percent?
6. Will hand-carried articles be separated from personnel for independent examination?
7. What method will be used to search personnel who alarm the detector?
8. Will personnel be forced to pass through the detector one at a time so that there is no confusion as to the cause of an alarm?
9. Will personnel be forced to pass through the detector at a normal pace?
10. Will personnel be urged not to carry or wear articles that frequently cause a detector alarm?

11. Will personnel passing through the detector be under security force observation?
12. If multiple units are used for throughput, will operation of one unit cause an alarm in another?
13. Will keyed RF transmission by guard communication devices cause detector alarms?
14. Will the false alarm rate due to power line transients be significant?
15. When a detector malfunctions, what alternate method will be used?

Maintenance

16. How often will the metal detector be tested for sensitivity drift or total detector failure?
17. Will a minimum test weapon be used to verify that sensitivity is properly adjusted?
18. What means of detection will be available should the detector fail?

Vulnerabilities

19. Will it be possible to pass a weapon through the detector at speed?
20. Will the detector have null areas through which weapons can be passed without detection?
21. Will the detector be desensitized at the floor to allow passage of steel-toed safety shoes?
22. If the detector is desensitized at the floor, will it be possible to pass a weapon through the detector at the floor without detection?
23. Will security personnel monitoring personnel passing through the detector be distracted from this task occasionally?
24. If so, will personnel using the detector be able to ascertain that monitoring of personnel traffic has been interrupted?
25. Will security personnel be given instructions on how to look for personnel exploiting detector vulnerabilities?

Related Questionnaires

26. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSEnvironmental Conditions

1. a. Yes.
- b. The detector will be protected from rain and wind, but the temperature will not be controlled.
- c. No environmental control will be used.

Performance ConditionsInstallation

2. a. The detector will be located more than 2 metres from any X-ray conveyor.
- b. The detector will be located between 1 and 2 metres from an X-ray conveyor but metal detector shields will be used.
- c. An X-ray conveyor will be within 2 metres of the metal detector.
3. a. The detector will not be located within 3 metres of metal doors and cabinets.
- b. Metal doors and cabinets will be located between 2 and 3 metres from the detector, but these metal items are relatively small.
- c. The detector will be located near metal doors and cabinets, but these are opened and closed only occasionally.
4. a. Yes, or the portal will be manned.
- b. Personnel will be forced to pass through the detector, but it will be possible to pass material around the detector unobserved.
- c. No, but surveillance will be depended upon for this function.

Operation

5. a. Yes.
- b. No.

6.
 - a. Yes, X-ray examination or a hand-held detector will be used.
 - b. Yes, visual inspection will be used.
 - c. No, personnel will be expected not to carry articles which will alarm the detector.
7.
 - a. Personnel will be searched using a hand-held metal detector.
 - b. Personnel will be requested to remove all metal articles and will pass through the detector a second time.
 - c. Personnel will be searched using a pat-down procedure.
8.
 - a. (1) Yes, guard supervision will be used for this function, and
(2) Signal lights will alert personnel as to when to enter the walk-through.
 - b. Only (1) above.
 - c. No.
9.
 - a. Yes, guard supervision will be used.
 - b. No control will be exercised.
10.
 - a. Yes, after search has revealed the cause of an alarm, a request will be made that the item not be carried anymore.
 - b. No, personnel will be expected to adapt naturally.
11.
 - a. Yes.
 - b. No.
12.
 - a. No, or multiple units will not be used.
 - b. Yes.
13.
 - a. No.
 - b. Yes, but the problem will not occur as the frequency used for communication will not affect the detector.
 - c. Yes, all such communication devices will be prohibited from the area.
14.
 - a. No.
 - b. Yes.
15.
 - a. Multiple detectors will be used for throughput; failure of a single detector will only cause slower processing.
 - b. Search with a hand-held metal detector will be used.
 - c. Pat-down search will be used.

Maintenance

16.
 - a. At least once per shift.
 - b. At least once per day.
 - c. At least once per week.
17.
 - a. Yes.
 - b. No.
18.
 - a. An operational spare will be available, or the detector will be one of several in use.
 - b. A hand-held detector will be used.
 - c. A pat-down search will be performed.
 - d. None.

Vulnerabilities

19.
 - a. No.
 - b. Yes, but personnel will be under constant observation.
 - c. Yes.
20.
 - a. No.
 - b. Yes, but null areas will be extremely difficult to locate.
 - c. Yes, it will be relatively easy to pass a weapon through the detector in at least one area.
21.
 - a. No.
 - b. Yes.
22.
 - a. No, or the detector will not be desensitized at the floor.
 - b. Yes.
23.
 - a. No.
 - b. Yes.
24.
 - a. Yes.
 - b. No.
25.
 - a. Yes.
 - b. No.

4.96 Windows and Associated HardwareFUNCTION

The function of the windows will be to aid detection, assessment, and response.

CONDITIONSSite Conditions

1. a. On which floor of the building will the window be located?
b. How high is it above ground level?
2. Will the window be visible from outside the protected area (PA)?
3. What is the size of the window?

Performance Conditions

4. What type of window will be installed?
5. If the window is operable, will the locking hardware be located so as to prevent operation from outside the window?
6. Of what material will the frame be constructed?
7. a. Will the frame be high security to retard cutting?
b. How is the frame hardened to provide high security?
8. How is the frame attached to the structure?
9. What type glazing will be installed?
10. Will the window panes be smaller than man-sized?
11. a. Is a protective barrier installed in front of the window?
b. What type will it be?
12. How is the protective barrier anchored to the structure?
13. What will be the probable penetration time(s) for the window and protective system? (See Barrier Technology Handbook and other references.)
14. Will the penetration time(s) be equivalent to that for the adjacent walls and/or doors?

Vulnerabilities

15. What classes of tools will correspond to the penetration time(s) above for penetration of the window and protective system?
16. What number of persons carrying out the penetrations are associated with the above penetration time(s)?

ANSWERSCONDITIONSSite Conditions

1. a. (1) Second floor or above.
(2) First floor.

b. (1) >70' above ground.
(2) 50'-70' above ground.
(3) 25'-50' above ground.
(4) <25' above ground.
2. a. Yes.
b. No.
3. (Specify dimensions).

Performance Conditions

4. a. Fixed (permanently closed).
b. Operable (can be opened).
5. a. Yes, or the window will not be operable.
b. No.
6. a. Steel.
b. Aluminum.
c. Wood.
7. a. (1) Yes.
(2) No.
b. (1) Hardened steel.
(2) Steel rods inserted.
(3) Other (Specify).
8. a. Welded.
b. Heavy duty fastener.
c. Other (specify).
9. a. Laminated/armored.
b. Wire glass.
c. Standard.
d. Tempered.
10. a. Yes.
b. No.

11. a. (1) Yes.
(2) No.
b. (1) Solid steel shutters.
(2) 3/4-inch minimum diameter bars at 6-inch or less centers.
(3) Less than 3/4-inch-diameter bars.
(4) Expanded metal mesh, 9 gage.
(5) Other (Specify).
12. a. Welded.
b. Bolted.
c. Concrete imbedded.
d. No protective barrier.
13. (Specify).
14. a. Yes.
b. No.
15. a. Explosives.
b. Thermal cutting tools.
c. Powered handtools.
d. Handtools.
16. a. 3 or more.
b. 2.
c. 1.

4.97 X-Ray Package/Container SearchFUNCTION

The function of the search will be to detect hidden special nuclear material (SNM), explosives or weapons in packages or emergency equipment at the PA, MAA, or VA, or to detect unauthorized removal of SNM from the MAA.

CONDITIONSPerformance ConditionsOperation

1. Will all packages be searched during every entrance or exit?
2. Will the X-ray search system be compatible with maximum package dimensions encountered?
3. Will the X-ray search system package throughput be adequate?
4. Will package throughput timing occasionally be rushed to expedite search procedures?
5. If the system will be used for weapon and bomb search, will guards be trained in weapon, explosives, and bomb recognition?
6. If the system will be used to search for nuclear material, will guards be trained in possible SNM and SNM shielding recognition?
7. Will written procedures be established for actions to be taken by guards when suspect contraband is detected in packages?
8. If a package is determined to be potentially dangerous, how available are ordnance personnel and facilities to meet the emergency?
9. Will guards be trained in X-ray machine operation and in malfunction recognition?
10. Will various X-ray search system options (direct view/remote view, large volume/small volume, conveyor/no conveyor) be employed as determined by search conditions?
11. Will X-ray system beam energies be chosen to optimize detection of various contraband at appropriate entrances and exits?
12. Will the X-ray system be chosen on the basis of the best contraband detection capability?

13. Will the X-ray system have automatic alert or special monitor display functions to aid in contraband detection?
14. Will X-ray system radiation levels be within tolerance levels for operator and personnel and package?
15. Will packages be aligned in the inspection area, depending on shape and expected contraband configuration, to optimize detection?
16. Will false alarms result from powerline transients?
17. In the event of X-ray system failure, what action will be taken?

Maintenance

18. Will X-ray system operation and calibration be tested periodically, using a standard resolution pattern?
19. Will tests using contraband simulation be performed to check guard performance?

Vulnerabilities

20. Will guards be distracted occasionally?
21. Will it be possible for a package or an object to be passed or thrown undetected through the X-ray system?
22. Will the guards be trained to search for and recognize portions of contraband not totally hidden and contraband partially obscured by other package contents?

Related Questionnaires

23. For evaluation completeness, please answer the following interrelated effectiveness test:
 - a. Equipment Checks/Maintenance.

ANSWERSCONDITIONSPerformance ConditionsOperation

1. a. Yes.
b. Search will be conducted on a random basis; more than 50 percent of packages will be searched.
c. Search will be conducted on a random basis; between 10 and 50 percent of packages will be searched.
d. Search will be conducted on an occasional basis; less than 10 percent of packages will be searched.
2. a. Yes.
b. No, but larger packages will be inspected visually and, where possible, the X-ray system will be used as an aid.
3. a. Yes, throughput will exceed requirements.
b. Yes, throughput should be adequate.
c. Throughput may be insufficient at times.
4. a. No.
b. Occasionally.
c. Yes.
5. a. Yes, or it will not be used for weapon or bomb search.
b. No.
6. a. Yes, or it will not be used for SNM search.
b. No.
7. a. Yes.
b. No.
8. a. Rigorous coordination with ordnance personnel, in conjunction with quick response time, will ensure proper handling of the situation.
b. Coordination and response time of ordnance personnel will be good. Situation will be adequately handled.
c. Slow response time of ordnance personnel may be a problem.
9. a. Yes, through a factory training program.
b. Yes, through a facility operation briefing.
c. No.

10. a. Yes.
b. No.
11. a. Yes; high energy for SNM, weapons, and bombs; higher energies for loading dock packages; lower energies for explosives.
b. No, a compromise energy will be chosen.
12. a. Yes, on the best contrast and spatial resolution.
b. No, on other considerations.
13. a. Yes, both.
b. Special monitor display functions only.
c. Automatic alert only.
d. Neither.
14. a. Yes, within Federal standards.
b. No.
15. a. Yes.
b. No.
16. a. No, a dedicated powerline will be used.
b. Yes.
17. a. A standby system will be brought into operation, or packages will be rerouted through an alternate system.
b. A visual inspection will be made.
c. Access will be terminated until the unit is repaired.

Maintenance

18. a. Yes, daily.
b. Yes, weekly.
c. Yes, when needed.
d. No.
19. a. Yes, weekly.
b. Yes, monthly.
c. No.

Vulnerabilities

20. a. No, never.
b. Yes, but very seldom.
c. Yes, on a routine basis.
21. a. No.
b. Yes.
22. a. Yes.
b. No.

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This Design Methodology document aids the licensee in understanding how the fixed site requirements of the Physical Protection Upgrade Rule affect the design of physical protection systems for fuel processing plants, fuel manufacturing plants, or other fixed site special nuclear material operations involving possession or use of formula quantities of strategic special nuclear material. The document consists of three major elements: Logic Trees, Safeguards Jobs and Component Matrices, and Effectiveness Test Questionnaires. The work is based upon a previous study conducted by Sandia Laboratories for the Nuclear Regulatory Commission.

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