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OFFICE OF STANDARDS DEVELOPMENT

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PROPOSED REVISION 1* TO REGULATORY GUIDE 5.7

ENTRY/EXIT CONTROL TO PROTECTED AREAS, VITAL AREAS, AND MATERIAL ACCESS AREAS

A. INTRODUCTION

Part 73, "Physical Protection of Plants and Materials," of Title 10, Code of Federal Regulations, specifies performance requirements for the physical protection of special nuclear materials and associated facilities. Section 73.20 describes a general performance requirement that must be met by establishing a physical protection system. This general performance requirement is further defined for fixed sites in § 73.45, where general detection, assessment, communication, and response capabilities are outlined. Finally, § 73.46 outlines typical measures that may be included in the overall system to meet the general requirements of §§ 73.20 and 73.45.

A significant element of the physical protection system is the control of the entry and exit of personnel, vehicles, and material. This control includes personnel identification and entry/exit control systems and procedures for searching individuals, vehicles, and materials. Entry and exit control procedures are used to provide assurance that only authorized individuals are allowed access to protected areas, vital areas, and material

*The substantial number of changes in this revision has made it impractical to indicate the changes with lines in the margin.

access areas. Entry search procedures, in conjunction with other protection elements, are used to provide assurance that firearms, explosives, and incendiary devices are not introduced into the subject areas. Exit search procedures from material access areas are used to provide assurance that strategic special nuclear material (SSNM) is not being covertly removed.

This guide describes measures NRC staff considers acceptable in implementing exit/entry control requirements at facilities other than nuclear power plants.

B. DISCUSSION

The objective of controlling access to protected areas, vital areas, and material access areas is to ensure that only authorized persons with legitimate need be allowed access to such areas. The objective of searching vehicles, personnel, or packages prior to entry into protected or material access areas is to prevent the introduction of firearms, explosives, or incendiary devices that could be used to commit radiological sabotage or aid in the theft of SSNM. The objective of searching all personnel and material exiting material access areas is to provide a means of detecting attempted theft or diversion of concealed SSNM.

Entry control involves the following functions:

1. Identification and authorization check,
2. Entry to control point,
3. Weapons search,
4. Explosive/incendiary device search,

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5. Badge exchange, if used

6. Admittance to area or denial and notification to security force of a problem.

The identity of an individual can be verified by determining something about an individual, such as facial features; by determining something possessed by an individual, such as a coded badge; or by determining something known to an individual, such as a numerical code. By using combinations of the above three identity verification processes, identity verification with a higher probability can be obtained. Such identification procedures can be accomplished by attendant security personnel or by the use of identification equipment such as badge reader systems.

Searching of incoming personnel or material can be accomplished by a hands-on "pat-down" search, by the use of devices that detect unauthorized materials, by the use of a "strip" search, or by a combination of all three. Entry searches that use equipment to perform the search function, such as metal or explosives detectors, are preferred as they minimize the imposition of a hands-on or strip search.

Exit searches, which are conducted to ensure that concealed SSNM is not removed from material access areas, should utilize both SNM detector equipment and firearm detection equipment to provide greater confidence that either shielded or unshielded material could be detected. All materials leaving the material access area should undergo such a search.

Direct responsibility for controlling the entry and exit of personnel, vehicles, and materials normally resides with members of the security organization.

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They should be adequately trained in operation of entry/exit control and search equipment and procedures in accordance with Appendix B to 10 CFR Part 73.

Extensive discussions and descriptions of various alternative equipments and procedures for use in controlling entry and exit and for conducting searches of personnel, vehicles, and materials can be found in the Bibliography and Microfiche Library of Technical Guidance portion of the Fixed Site Upgrade Rule Guidance Compendium, Volume II.

For the purpose of this guide the following definitions are provided:

1. "Guard" means a uniformed individual armed with a firearm whose primary duty is the protection of special nuclear material against theft and/or the protection of a plant against radiological sabotage.

2. "Watchman" means an individual, not necessarily uniformed or armed with a firearm, who provides protection for a plant and the special nuclear material therein in the course of performing other duties.

3. "Escort" means a member of the security organization or other designated individual responsible for accompanying those personnel not allowed unescorted access within a protected area. An escort is not required to possess technical knowledge of processes or equipment as is required by the two-man concept.

C. REGULATORY POSITION

1. PROTECTED AREAS

a. Entry Identification and Authorization

At each entry/exit control point (EECP) into a protected area (PA), a means of establishing the identity and access authorization of incoming

individuals should be provided. An acceptable means is facial recognition and positive comparison to an authorized picture badge. Such identity verification can be performed by attendant security personnel or by the use of remotely viewed CCTV systems that display an acceptable image of the individual's face and compare it to an image of a picture badge or a stored image of that individual's face. The identification/verification procedure and confirmation of entry authorization should be performed prior to any search function. To facilitate both identification and search functions, entry and exit traffic should be separated by physical barriers, and employee and visitor traffic should be processed separately.

b. Personnel Search

A search of entering personnel for firearms, explosives, or incendiary devices should be conducted by use of both a firearms detector and an explosives detector. All incoming individuals not possessing an NRC or Department of Energy (DOE) material access authorization should undergo such a search. DOE couriers engaged in the transport of SSNM are exempt from such searches.

A sample of all individuals possessing NRC or DOE material access authorizations should be searched. The sample rate should be a minimum of 10% selected randomly from all entering personnel who possess the necessary authorizations.

In the event that search equipment indicates the presence of firearms, explosives, or incendiary devices, the following actions should be taken:

1. The security personnel should request that the individual empty his or her pockets and again be tested by the search equipment. If the individual complies, the equipment no longer indicates the presence of

firearms or explosives, and the contents of the pockets have been verified as not including firearms, explosives, or incendiary devices, the individual may be allowed to pass into the protected area.

2. If, however, the equipment continues to indicate the presence of firearms or explosives, a physical search should be made by one unarmed security person, while at least one guard observes the search. An acceptable alternative to a hands-on search is a "strip search," which could be completed in the privacy of a separate searchroom and which should include the individual disrobing (except for underclothing) and submitting his or her clothing for inspection.

3. If an individual refuses to comply with either a hands-on or strip search or if a firearm, explosive, or incendiary device is found, entry should be denied.

4. If material of a suspicious and unknown nature is found, entry should be delayed until responsible security personnel are satisfied that the material is not of a threatening nature.

When the initial search uses hand-held detectors or is a hands-on search, firearms should be searched for first, as it is presumed that a concealed firearm is a more immediate danger to the searcher than concealed explosives or incendiary devices. Hands-on or strip searches should be conducted by security personnel of the same sex as the individual undergoing the search.

Entry into the protected area should be granted to individuals only after they have satisfactorily met the identification, authorization, and search requirements of 10 CFR Part 73. The opening to the last

barrier to the PA should be controlled by an individual isolated within a bullet-resisting structure. Acceptable means to accomplish this are to provide a bullet-resisting booth meeting UL Level IV standards at the last barrier of the EECP for the individual who controls the opening to the PA or to have this opening controlled by the central alarm station (CAS) or secondary alarm station (SAS) operator or both.

c. Package or Material Identification and Search

At PA EECPs all hand-carried packages should be searched by direct observation, by the use of firearms detectors or explosives detectors, or by the use of X-ray equipment for concealed firearms, explosives, incendiary devices or other items that could be used for theft or sabotage purposes. Packages carried by individuals who possess an NRC or DOE material access authorization may be excepted unless that person is one of the sample selected randomly to undergo on entry search, in which case any hand-carried packages should also be searched.

Hand-carried packages or materials that cannot be readily opened or otherwise cannot be effectively searched by direct observation should be submitted to suitable detection equipment, which may include X-ray devices. If the nature of the packaging interferes with effective operation of firearm or explosives detection equipment, X-ray should be used. Any item or material determined to be of a questionable nature by search personnel should not be allowed into the protected area until responsible security personnel are satisfied that the material is not of a threatening nature.

d. Vehicle and Cargo Entry and Search

All vehicles except DOE vehicles engaged in the transport of SNM and emergency vehicles responding to emergency conditions are required to be searched for unauthorized personnel, firearms, explosives, and incendiary devices prior to entry into the protected area. The search should include the cab, engine compartment, undercarriage, and cargo area. (Refer to NUREG 0485 for details. A level I search should be conducted as a minimum.) The use of vehicle sally ports is an acceptable way to facilitate identification, control, and search functions.

All material or packages to be delivered into the PA are required to be identified and verified as an authorized delivery prior to entry. A sample of all such delivered packages or materials should be searched for firearms, explosives, or incendiary devices, the sample rate to be a minimum of 10% selected randomly from all such deliveries. Where size, weight, packaging, or other characteristics prohibit an effective search by direct observation, detection equipment, or X-ray, entry may be granted so long as:

1. The material is escorted to its destination by a member of the security organization,

2. The material is not initially offloaded or unpackaged adjacent to a vital or material access area, and

3. Offloading and unpackaging is observed by at least two members of the security organization for the purpose of ensuring that only authorized material has been delivered and that there are no concealed firearms, explosives, or incendiary devices.

e. Entry and Search Aids

The use of pedestrian and vehicle sally ports (secure access passageways) can provide an effective means of isolating, identifying, and searching individuals in a controlled area prior to allowing entry into the PA. By interlocking the first and second openings in the sally port so they cannot be opened simultaneously, a positive means of preventing "piggybacking" is available.

Firearms detectors, whether of the hand-held or portal variety, should be capable of detecting one of the following four weapons, Colt .25 automatic, Titan .25 automatic, General Precision Model 20-.22 caliber, or CDM .22 short, located anywhere on an individual with 85% confidence. The false alarm rate should not exceed 10% when adjusted to this detection level. The devices should be adjusted to discriminate between typical firearm and non-firearm masses of metal.

Explosives detectors, whether of the hand-held or portal variety, should be capable of detecting dynamite, TNT, and similar nitrogen compounds in a minimum amount of 200 grams with 90% confidence. The false alarm rate should not exceed 1% when adjusted to this detection level. If the search for explosives is to be performed directly by security personnel, it should be performed only after a search for firearms has been made.

A search dog may be capable of providing a satisfactory detection capability for firearms and explosives. If used, they should be individually tested to ensure their continued capability and reliability. As an animal may present unpredictable problems and weaknesses, a set of

trained and tested backup individuals or other detection devices or equipment should be immediately available to serve as a substitute in the event of illness or other sign of abnormal behavior. A dog should be used only if it can be shown to detect firearms or explosives with equal or greater confidence than existing alternatives. A dog may be particularly useful in the search of vehicles or oversize packages. As the duration of a dog's effectiveness for performing search functions may be limited, it should be used only as a secondary aid.

Annunciation of metal and explosives detection equipment could be both aural and visual.

The EECP should be provided with one or more duress alarms that annunciate in both the CAS and SAS. Such alarms should be placed in a concealed location that can generally be reached by attendant security personnel and activated in an unobtrusive manner. An acceptable alternative is the use of duress alarms that are worn or carried by attendant security personnel and that can be activated unobtrusively. Such duress alarms should be worn or carried at all times that security personnel attend an EECP.

2. MATERIAL ACCESS AREAS

a. Entry Identification and Authorization

Individuals desiring entry to material access areas (MAAs) should be verified as being on appropriate authorization schedules and should be identified by comparison of facial features to an authorized picture badge. An acceptable method of verifying authorization is the use of a code intrinsic to the picture badge indicating that entry to MAAs is authorized.

Individuals not possessing NRC or DOE material access authorizations should not be allowed access unless accompanied by an authorized escort. At no time should a lone individual be allowed entry to an MAA or a vault. As a minimum, entry to an unoccupied MAA requires at least two individuals to meet the intent of the two-man concept.

b. Package or Material Identification and Search

All packages and materials entering a material access area should be searched for firearms, explosives, and incendiary devices. Search procedures and equipment as discussed previously for use at protected area EECPs should be used. In the event that security search personnel are suspicious of the nature of any searched packages or material, entry should be delayed until the nature or identity of the package or material can be determined.

c. Entry and Search Aids

Entry and search aids discussed in the section on protected areas are also applicable to EECPs at MAA boundaries. In addition, EECP doors when unmanned should be alarmed and annunciate in both the CAS and SAS.

d. Exit Search for SSNM

Prior to exit from an MAA, all individuals, vehicles, packages, and other materials are required to be searched for concealed SSNM. This search should be conducted using both metal detection and SNM detection equipment. The metal detection system used to search for concealed shielded SSNM should be capable of detecting a minimum of 100 grams of nonferrous metal (shielding) with 90% confidence concealed anywhere on an individual. The false alarm rate should not exceed 1% for that level

of detection. For areas containing plutonium or U-233, SNM detection equipment should be capable of detecting 0.5 gram of plutonium or 1 gram of uranium-233 shielded by 3 mm of brass concealed anywhere on an individual with 90% confidence. The false alarm rate should not exceed 1% for that level of detection. For areas containing highly enriched U-235, the SNM detection equipment should be capable of detecting 3 grams of uranium enriched to 90% in the uranium-235 isotope in 3 mm of brass concealed anywhere on an individual with 50% confidence. The false alarm rate should not exceed 1% for that level of detection. An acceptable sensitivity for SNM detection equipment at exits from areas that contain only fabricated discrete items is 30 grams of U-235 as contained in cut-up portions of the items with the same level of detection sensitivity and false alarm rate as stated above.

Individuals should undergo two separate searches prior to exiting an MAA. An acceptable method of conducting these searches is to require individuals to pass through two separate sets of metal and SNM detection equipment, each set monitored by a different member of the security organization. For individuals exiting an area that contains only encapsulated or alloyed SSNM, the second search may be made of a sampling of all individuals exiting the area, the sample rate to be a minimum of 10%, with individuals selected randomly to undergo the search.

If an SNM or metal detector is triggered by an individual attempting to exit an MAA EECP, the individual should be asked to remove all items from his or her pockets and again pass through the detection equipment. If the detector still triggers, a hands-on or strip search should be

conducted. In the event search personnel are unsure of the nature of an object or material uncovered during a search, the material or object should be confiscated and the individual's exit delayed until a determination can be made that the object or material is not SSNM or does not contain SSNM.

Vehicles, materials, or packages, including trash, uncontaminated wastes, tools, and other equipment should be searched with SNM and metal detection equipment where appropriate. This search should be conducted by a team of at least two authorized and designated individuals who are not normally allowed access to the material access area in question. An acceptable means of accomplishing such searches for items too large to be accommodated in pedestrian EECPs, is to provide a holding area within the MAA that can be isolated from other MAA activities when search personnel are conducting authorized searches.

e. Accounting for Individuals in MAAs

Procedures should be employed at MAA EECPs to account for the number and identity of individuals within the MAA. Manual or automated accounting procedures are equally acceptable so long as the procedures can determine at any given time that no lone individual is within the MAA. An attempted violation of the two-man concept, e.g., if one of two individuals alone within an MAA attempts to exit without the other, should be detectable at the EECP, CAS, and SAS.

f. Vaults

Entry to vaults should be controlled so that individual identification and comparison to authorization schedules is accomplished prior to opening

the vault door. The use of split-screen CCTV or CCTV and badge reader are acceptable means of establishing identification and authorization. Entry control should ensure use of the two-man concept during entry and access to vaults.

3. VITAL AREAS

Entry to vital areas should be controlled so that individual identification and comparison to authorization schedules are accomplished prior to entry into the area. Entry control should ensure use of the two-man concept. The use of attendant security personnel, authorized escorts, or remotely viewed CCTV systems that compare a facial image to an authorized picture badge are all acceptable means of providing such control.

4. EMERGENCY PROCEDURES

Emergency procedures should be developed to deal with the possibility of failure of entry/exit detection and assessment equipment or emergency evacuation.

a. Failure of Detection Equipment

Provisions should be made to use alternative EECPs or backup detection equipment or security personnel and provide for speedy repair of malfunctioning detection equipment. Failure of detection equipment should not be allowed to compromise the effectiveness of required search procedures.

b. Evacuation Procedures

To the extent possible, and without compromising safety practices or considerations, procedures should be established to protect against the possibility of an emergency evacuation being used to remove SSNM from the facility or to gain unauthorized access to the facility. Such procedures should be part of the facility's contingency plan.

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VALUE/IMPACT ASSESSMENT

A separate value/impact analysis has not been prepared for the proposed revision to this regulatory guide. The changes were made to make the guide consistent with the upgraed physical protection amendments to the regulations proposed in the Federal Register of August 9, 1978 (43 FR 35321). These proposed amendments are now under consideration by the Commission for publication as effective amendments. A value/impact analysis prepared for the proposed amendments was made available in the Commission's Public Document Room at the time the proposed amendments were published. This analysis is appropriate for the final amendments as well as for the regulatory guide revisions appropriate to those amendments.

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