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U.S. ATOMIC ENERGY COMMISSION

REGULATORY GUIDE

DIRECTORATE OF REGULATORY STANDARDS

REGULATORY GUIDE 1.17

PROTECTION OF NUCLEAR POWER PLANTS AGAINST INDUSTRIAL SABOTAGE

A. INTRODUCTION

On February 1, 1973, the Atomic Energy Commission had published in the *Federal Register* proposed amendments to its regulation in 10 CFR Part 50, "Licensing of Production and Utilization Facilities." Proposed § 50.55c would require each licensee authorized to operate a nuclear reactor to provide appropriate protection against industrial sabotage. Proposed paragraph (c), "Physical Security Plan," of § 50.34 would require each application for an operating license to include a physical security plan. Proposed paragraph (p) of § 50.34 would require existing licensees who have not submitted a physical security plan to submit such a plan to the Commission for approval within 60 days after the publication of these amendments in effective form. Furthermore, § 50.34 requires that an application for a construction permit include the principal design criteria to be satisfied in meeting the requirements for structures, systems, and components essential to safety. This regulatory guide describes physical security criteria that are generally acceptable for the protection of nuclear power plants against acts of industrial sabotage which could lead to a threat to the health and safety of the public. The Advisory Committee on Reactor Safeguards has been consulted concerning this guide and has concurred in the regulatory position.

B. DISCUSSION

Subcommittee ANS-3 of the American Nuclear Society Standards Committee has developed a standard that provides criteria for industrial security programs to protect operational nuclear power plants from acts of industrial sabotage which could lead to a threat to the health and safety of the public. This standard, to be designated ANSI N18.17, "Industrial Security for Nuclear Power Plants,"[1] has been reviewed by American National Standards Committee N18 and is in final review by the American National Standards Institute (ANSI) Board of Standards Review.

In addition to the procedural measures described in ANSI N18.17, the design of structures, systems, and components important to safety (e.g., such features as redundancy, automation, independence, diversity, protection against common-mode failures, and the placement of facilities and equipment) can also provide protection against acts of industrial sabotage. Therefore, it is considered prudent to enhance this form of protection by protecting the vital equipment against surreptitious acts of industrial sabotage that could impair the performance of its intended safety functions. It is important that such protection be considered early in the design stage and that protective measures be described in the application for a construction permit. At a later stage, these measures would be described in greater detail in the applicant's security plan identified in proposed paragraphs (c) and (p) of § 50.34.

C. REGULATORY POSITION

The requirements and recommendations contained in the proposed ANSI Standard N18.17, "Industrial Security for Nuclear Power Plants," dated March 23, 1973, are generally acceptable and with due consideration for the unique characteristics of the plant and its owner organization, provide an adequate basis for a physical security plan for the protection of nuclear power plants against industrial sabotage, as supplemented by the following.

1. Security Systems

a. The plant security forces should have onsite, armed, and uniformed individuals whose primary duties are the protection of facilities from acts that could endanger the health and safety of the public.

b. All security alarms should annunciate in a continuously manned onsite central alarm station and in at least one other continuously manned station not

[1] Copies may be obtained from the American Nuclear Society, 244 E. Odgen Avenue, Hinsdale, Illinois 60521.

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Published guides will be revised periodically, as appropriate, to accommodate comments and to reflect new information or experience.

Copies of published guides may be obtained by request indicating the divisions desired to the U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Director of Regulatory Standards. Comments and suggestions for improvements in these guides are encouraged and should be sent to the Secretary of the Commission, U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Chief, Public Proceedings Staff.

The guides are issued in the following ten broad divisions:

1. Power Reactors
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10. General

necessarily onsite. All alarms should be self-checking and tamper indicating. The annunciation of an alarm at the onsite central alarm station should indicate the type of alarm (e.g., intrusion alarm, emergency exit alarm) and location. The annunciation at the other alarm station should, as a minimum, provide indications that an intrusion or illegal entry has occurred. The affected annunciator should be reset only after satisfactory communications have taken place between alarm stations. All intrusion alarms, emergency exit alarms, alarm systems, and line supervisory systems should, as a minimum, meet the level of performance and reliability indicated by GSA Interim Federal Specification W-A-00450 A (GSA-FSS).[2]

2. **Equipment Testing**

a. Security-related equipment, except for communication equipment, should be functionally tested for operability at the commencement and completion of each interval during which such equipment is used for security, but no less frequently than once each seven days.

b. Communication equipment used for security should be tested with a minimum frequency of once at the beginning of each security force work shift.

3. **Protection of Vital Equipment**

Appropriate design features and equipment arrangements should be provided and be consistent with other safety requirements to reduce the opportunity for successful industrial sabotage of vital equipment. To the extent feasible, these features should include measures to protect against undetected intentional acts that could impair equipment performance, such as automatic indication of inoperability.

Detailed security measures for the physical protection of the facility against industrial sabotage will be withheld from public disclosure as provided in § 2.790 of the Commission's regulations in 10 CFR Part 2.

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[2] Copies may be obtained from business service centers of the General Services Administration Regional Offices located in the following cities:

Boston, Mass.	Denver, Colo.	Kansas City, Mo.
New York, N.Y.	San Francisco, Ca.	Los Angeles, Ca.
Washington, D.C.	Atlanta, Ga.	Seattle, Wash.
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SAFETY GUIDE 17—PROTECTION AGAINST INDUSTRIAL SABOTAGE

A. Introduction

In its Memorandum and Order dated February 20, 1967, in the Florida Power and Light case, the Commission noted that it would expect the staff to assure at the operating license stage that appropriate industrial security measures are provided by an applicant to protect against industrial sabotage in a nuclear power plant. This guide describes a suitable program for protecting against industrial sabotage.

B. Discussion

The following means can be employed to reduce the probability and effects of industrial sabotage: (1) control of access of personnel and material to the plant and plant site, (2) selection of plant operating personnel, (3) monitoring of plant equipment, and (4) design and arrangment of plant features.

1. *Control of Access*—A program for protection against industrial sabotage includes security measures to prevent access of unauthorized personnel to the plant site, control room, reactor building, other vital buildings, and to equipment within these areas. Control of the extent of acess to the plant by the general public, utility employees not part of the regular plant staff, contractor personnel, and unauthorized persons is necessary to reduce the opportunity for sabotage. The control may be achieved by erecting a physical barrier, such as a fence, around the facility and by stationing guards at each point of access. A program for surveillance of the physical barrier (e.g., by roving patrols, closed-circuit television, or intrusion alarms) will assure the continued effectiveness of the barrier.

   Adequate control of individuals within the plant site also is important for protection against industrial sabotage. The conduct of persons or groups that are not part of the operating staff should be monitored while they are at the plant site. These measures should include provisions for detecting the unauthorized presence of individuals in certain areas whether or not these individuals are part of the plant operating staff. For example, it may be prudent for control room personnel to challenge anyone attempting to enter who is not "known by sight" as a person authroized for that area. Procedures for monitoring and controlling the access to the plant and movement of persons within the plant may include badging of employees, signing in and out of visitors, providing escorts for "uncleared" visitors, and challenging the entry of persons attempting to enter vital areas.

   Precautions also are necessary to control the passage of unauthorized material to and from the plant site. Procedures which include appropriate searching of packages and briefcases of visitors, and either forbidding the entry of or requiring the inspection of vehicles other than those associated with plant operation are effective means in controlling the flow of unauthorized material to and from the plant.

   Persons responsible for physical security at the plant site and at higher management levels should be identified. It should be made clear, for example, whether the ultimate responsibility for security at the plant rests with the plant superintendent or with the senior security officer. In addition, procedures are needed to assure proper coordination between the operating and security staffs. The security measures appropriate for emergency conditions may be significantly different from those for normal operation; therefore, it is important that security procedures be made consistent with the plan appropriate for the plant condition (e.g., emergency security procedures should be consistent with the emergency plan).

   The opportunity for industrial sabotage also may be reduced by providing locks on vital equipment. In determining the acceptability of using equipment locks, all relevant safety considerations in addition to sabotage

must be evaluated to assure that overall safety is enhanced by their use.

The availability of a pre-planned course of action in the event of an actual or potential danger is important to controlling access to the plant. Procedures should be developed for dealing with potential dangers, such as bomb threats and civil distrubances, including provisions for timely notification of the proper authorities. To assure an effective physical security program requires continued vigilance. Procedures should be developed for investigation of security incidents and for auditing the security program.

2. *Selection of Personnel*—It is important that utility management select and maintain reliable personnel to protect against industrial sabotage. Management and supervisory attention to the competence and demeanor of engineering and operating staffs is important throughout the lifetime of the plant. To this end, employment standards and practices for selection of competent, well-balanced individuals and procedures for review of employee performance should be established.

An alert staff, cognizant of its responsibility for protection against industrial sabotage, is necessary. Personnel should be trained with regard to plant security, and procedures should be implemented to aid in early detection of unusual behavioral patterns of employees, such as may result from drug abuse.

3. *Monitoring of Equipment*—A program for protection against industrial sabotage includes means for detecting physical changes of the status of critical plant components on a periodic basis during reactor operation. Procedures should be developed and personnel trained to identify equipment that has been disabled or whose status has undergone an unauthorized change. This may be accomplished by use of check lists to ascertain, for example, vital valve positions. Such a procedure would help to assure that unauthorized changes in the positions of a significant number of valves would not remain undetected for long periods of time.

4. *Design and Arrangement of Equipment*—Nuclear reactor power plants should be designed to provide a reasonable assurance that deliberate acts of sabotage will not lead to consequences that could cause undue risk to the health and safety of the public. Design and arrangement of features included to provide safety in depth, redundancy, independence, diversity, and protection against common mode failure also provide protection against industrial sabotage. In addition, the many automatic protection features that provide assurance that operator error or inattention will not result in a dangerous situation also reduce the probability that acts of industrial sabotage will lead to significant fission product releases. Protection against industrial sabotage that is provided over and above that included for other purposes, such as physical separation of redundant components, must be consistent with other safety requirements.

C. Regulatory Positions

Means should be provided in nuclear plants, and procedures should be developed and implemented to reduce the opportunity for and mitigate the effects of successful industrial sabotage. Particular consideration should be given to control of access, selection of personnel, monitoring of vital equipment, and design and arrangement of equipment.

1. *Control of Access*—The means provided to control access by unauthorized persons to the plant site and to vital areas, buildings, and equipment within the nuclear power plant should include:
   (a) A physical barrier, such as a fence, around the facility;
   (b) Surveillance of this barrier, such as by roving patrols, closed-circuit television, or intrusion alarms;
   (c) Guards at each point of access;
   (d) Locks on vital equipment where consistent with other safety requirements;
   (e) An organization plan that identifies the persons having line responsibility for security matters;
   (f) Procedures for monitoring and controlling the access to and from the plant and the movement of persons

within the plant by means, such as badging of employees, signing in and out of visitors, providing escorts for visitors, and challenging the entry of unauthorized persons attempting to enter vital areas;

(g) Procedures for appropriate searching of visitors;

(h) Procedures for forbidding the entry of unauthorized vehicles and for searching vehicles entering site;

(i) Procedures associated with physical security to deal with emergencies at the plant;

(j) Procedures for dealing with potential dangers, such as bomb threats and civil disturbances, including provisions for timely notification of the proper authorities;

(k) Procedures for investigation of security incidents and for auditing of the security program.

2. *Selection of Personnel*—The means provided to assure a staff of reliable plant personnel should include:

(a) Establishment of employment standards and practices that provide for selection of competent, well-balanced individuals;

(b) Procedures for review of employee performance;

(c) Procedures for early detection of unusual behavioral patterns of employees, such as may result from drug abuse;

(d) Training of personnel with regard to plant security.

3. *Monitoring of Vital Equipment*—Means should be provided to monitor the status of vital equipment. Procedures should be developed and personnel trained to identify equipment that may have been disabled or whose status may have undergone unauthorized changes (e.g., a valve closed when it should be open).

4. *Design and Arrangement of Equipment*—Appropriate design features and equipment arrangements should be provided and be consistent with other safety requirements to reduce the opportunity for successful industrial sabotage.

Detailed security measures for the physical protection of the facility against industrial sabotage will be withheld from public disclosure as provided in §2.790 of the Commission's regulations in 10 CFR Part 2.