



A Technique for Analyzing the Impact of Noncompliance with  
Physical Security Requirements

to be presented at

Third Annual Symposium on Safeguards & Nuclear Material Management  
May 6-8, 1981  
School for Nuclear Technology; Karlsruhe, Germany

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Physical Security Requirements

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ABSTRACT

The United States Nuclear Regulatory Commission (USNRC) presently analyzes the impact that items of noncompliance with physical security requirements could have on the ability of (1) commercial power reactor licensees to prevent, deter, detect, and/or respond to unauthorized access to vital equipment, and (2) certain fuel facility licensees to prevent undetected and/or unauthorized removal of strategic nuclear material. These analyses result in judgments about the effect of items of noncompliance on the overall effectiveness of a physical security system and, consequently, on the level of assurance that the degraded system can meet the performance requirements of Part 73, Title 10, Code of Federal Regulations. This paper describes the methodology used by inspectors from the Office of Inspection and Enforcement to conduct these analyses.

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SUMMARY

The United States Nuclear Regulatory Commission (USNRC) presently analyzes the impact that items of noncompliance with physical security requirements could have on the ability of (1) commercial power reactor licensees to prevent, deter, detect and/or respond to unauthorized access to vital equipment, and (2) certain fuel facility licensees to prevent undetected and/or unauthorized removal of strategic nuclear material. These analyses result in judgments about the effect of items of noncompliance on the overall effectiveness of a physical security system and, consequently, on the level of assurance that the degraded system can meet the performance requirements of Part 73, Title 10, Code of Federal Regulations. This paper describes the methodology used by inspectors from the Office of Inspection and Enforcement to conduct these analyses.

Title 10 of the U.S. Code of Federal Regulations, Part 73 requires that licensees establish and maintain a physical protection system capable of protecting with high assurance against acts of radiological sabotage and to prevent theft of special nuclear material. The regulation itself contains performance type statements such as "Prevent, Deter, Detect, Delay, and Respond" followed by specification type statements concerning such specific security system features as security guards, barriers, access

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controls, CCTV, alarms, locks, etc. The licensee's security program to meet these requirements is described in a security plan which constitutes the legally enforceable requirements with which the licensee is expected to remain in compliance.

Except for the general performance statements, the NRC safeguards inspection process resembles that used by almost any regulatory authority to determine compliance. However, because of the uniqueness of the performance statement, there is a need for NRC inspectors to determine the impact that noncompliance with any of the specification type requirements has on the continuing ability of the licensee to meet the general performance requirement. A special procedure is used to identify areas that interrelate so that when problems are identified during an inspection the inspector will immediately inspect related areas to determine if adequate protection is still being provided. This procedure also is used to determine the severity of non-compliances and the appropriate/commensurate enforcement action.

This procedure, then, calls for a methodology, such as a fault tree or logic tree analysis, to show the relationship between the overall performance statement and the individual specifications, functions, or components. The Office of Inspection and Enforcement has developed a procedure (TI-1016) to assist inspectors in making a judgment about whether a licensee is in compliance with the overall performance requirement by evaluating the synergistic effect of deficiencies.

TI-1016 is entitled "Physical Protection Safeguards Analysis of Noncompliance". The analysis enables NRC management and staff to understand the impact that noncompliance with the approved security plan could have on the capability of the licensee's safeguards program to: 1) prevent, deter, detect and/or respond to unauthorized access to vital equipment at licensed power reactors, or 2) to prevent undetected and/or unauthorized removal of SNM at Group I fuel facilities. It applies to both commercial nuclear power reactors and to commercial nuclear fuel fabrication facilities utilizing high enriched special nuclear material. To facilitate field analysis and to make the technique as simplistic as possible, vulnerability charts were developed that relate parts of the rule to protective measures that exist at various locations throughout the facility.

Compliance with the physical security plan is indicative that the licensee's security program is producing a high level of assurance that the performance requirement is being satisfied. This assumes that there are no weaknesses in the security plan--when such weaknesses are identified corrective action is taken. Noncompliances can have many degrees of impact upon security system performance. It is possible that the number and significance of noncompliances do not adversely affect the level of assurance; however, noncompliances which may seem insignificant when considered independently, can cause a serious degradation of security when considered collectively. The procedure serves as a tool to enable the inspector to make this distinction.

There are three levels of assurance which will result from analyzing the physical protection of a facility:

High Assurance - The noncompliance(s) found within the scope of the inspections do not adversely affect the licensee's ability to meet the performance requirement. Corrective actions will normally be initiated or completed within 20 days.

Conditionally Acceptable Assurance - The noncompliance(s) found are such that the physical security system can still meet the general performance requirement, however, further failures will significantly reduce the capability to meet the performance requirement. Corrective action needs to be initiated or completed within 20 days or less, depending on specific circumstances.

Unacceptable Assurance - The noncompliances indicate that the ability to meet the performance requirements is reduced to a single security element (i.e., locked door, guard, alarm, etc.). If the facility is found to have "unacceptable assurance", the inspector remains on site until "conditionally acceptable assurance" or better is attained.

The specific methods used to conduct the safeguards analysis, and examples of each type of determination are discussed at length in the body of the paper that follows.