1. Record Nr. UNINA9910958247003321

Autore	IAEA
Titolo	Handbook on the Design of Physical Protection Systems for Nuclear Material and Nuclear Facilities : Technical Guidence
Pubbl/distr/stampa	Havertown : , : International Atomic Energy Agency, , 2021 ©2021
ISBN	9789201036216
Edizione	[1st ed.]
Descrizione fisica	1 online resource (176 pages)
Collana	IAEA Nuclear Security ; ; v.40-T
Disciplina	363.1799
Soggetti	Nuclear facilities - Safety measures Nuclear facilities
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- 1. INTRODUCTION -- Background -- Objective -- Scope -- Structure -- 2. KEY FUNCTIONS OF A PHYSICAL PROTECTION SYSTEM -- Deterrence -- Detection -- Delay -- Response -- 3. DESIGN AND EVALUATION OF A PHYSICAL PROTECTION SYSTEM -- Identifying requirements for a physical protection system (Phase 1) -- Use of threat information -- Target identification -- Characterization of the facility -- Designing a physical protection system (Phase 2) -- General design considerations -- Intrinsic security -- Evaluating the physical protection system design (Phase 3) -- Other design considerations -- Physical protection system integration -- Operations -- Safety -- Nuclear material accounting and control -- Information and computer security -- 4. PHYSICAL PROTECTION EQUIPMENT -- Detection -- Performance characteristics -- Environmental conditions -- Sensor classification -- Sensor type -- Sensor applications -- Exterior sensors -- Interior sensors -- Interior and exterior sensors -- Alarm assessment -- Video technology -- Lighting technology -- Illumination -- Alarm stations -- Voice communications systems -- Search systems -- Detection of explosives -- Nuclear material detection -- Access control systems -- Personnel access control -- Vehicle access control -- Access control in emergency situations -- Locks and keys -- Seals or tamper indicating devices -- Delay -- Low security barriers -- Security fences -- Vehicle barriers -- Structural barriers -- Turnstiles

and doors -- Boundary penetration barriers -- Specialized barriers -- Dispensable barriers -- Airborne barriers -- Marine barriers -- Role of barriers for stand-off sabotage attacks -- 5. RESPONSE -- Equipment -- Qualification -- Training -- 6. PHYSICAL PROTECTION SYSTEM NETWORKS AND SUPPORT SYSTEMS -- Physical protection system networks -- Network design -- Communication networks. Encryption methods -- Transmission technology -- Physical protection system support systems -- Power and backup systems -- Location and protection requirements for stationary equipment -- Protection considerations of network cables -- Tamper protection -- Physical protection system network maintenance and testing -- 7. NEW AND EMERGING TECHNOLOGIES -- Needs assessment -- Testing and evaluation -- Technology deployment -- 8. PERIODIC EQUIPMENT TESTING -- Types of testing -- Pre-acceptance testing -- Acceptance testing -- Operability and functional testing -- Maintenance and calibration testing -- On-site testing -- Use of dedicated test beds -- 9. PHYSICAL PROTECTION SYSTEM EVALUATION -- Prescriptive verification -- Prescriptive evaluation methods -- Performance testing -- Performance evaluation methods -- Scenario development -- 10. PHYSICAL PROTECTION SYSTEM ANALYSIS -- Path analysis -- Neutralization analysis -- Probability of effectiveness of a physical protection system -- Insider analysis -- Scenario analysis -- 11. MANAGEMENT SYSTEMS FOR NUCLEAR SECURITY -- Application of management systems to the physical protection system -- Requirements management -- Assembling stakeholder requirements -- Analysing the requirements -- Verifying the requirements -- Documenting traceability of the requirements -- Work direction and control -- Resource management -- Assurance activities -- Sustainability and continuous improvement -- Appendix EXAMPLE NEEDS ASSESSMENT AND REQUIREMENTS ANALYSIS FOR UNMANNED AERIAL SYSTEMS -- REFERENCES -- Abbreviations.

Sommario/riassunto

This handbook, published by the International Atomic Energy Agency (IAEA), provides comprehensive technical guidance on the design of physical protection systems for nuclear material and facilities. It forms part of the IAEA Nuclear Security Series, which offers international consensus guidance to help States fulfill their nuclear security obligations. The publication outlines key functions of a protection system, such as deterrence, detection, and response, and covers design, evaluation, and management of these systems. It aims to support States in implementing effective security measures to protect nuclear materials in various contexts, including domestic use and international transport. The guidance draws on the practical experiences of IAEA Member States and aims to enhance global nuclear security by promoting international best practices.