Pakistan Nuclear Regulatory Authority

Development of Physical Protection Regulatory Requirements in Pakistan

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Outline

- Introduction
- Evolution of Physical Protection Requirements
- Basis For Development of PP Regulation
- Regulations on Physical Protection
- Future Challenges
- Conclusion



Introduction

Amendment to CPPNM Fundamental Principle C: legislative and regulatory framework to govern physical protection

Physical protection requirements covered in various PNRA Regulations and further adopted IAEA INFCIRC/225 as regulatory requirements

Enhancement of framework through developing comprehensive regulations on physical protection



Evolution of physical protection requirements





Basis for Development of Physical Protection Regulation

- **Obligation of PNRA Ordinance**
- International legal obligations e.g. CPPNM (Amendment) and UNSCR 1540
- International Practice
- Technological Advancement
- Threat Assessment
- Experience Feedback



- Scope
 - Covers all aspects of physical protection of nuclear installations and nuclear material during use, storage and transport
- Objectives are
 - To protect Nuclear Material against unauthorized removal
 - To protect NM and Nuclear Installations against sabotage

The Gazette of Pakistan
PUBLISHED BY THE AUTHORITY
ISLAMABAD, Day, Month Date, Year
PART II Statutory Notification (S.R.O.) GOVERNMENT OF PARTETAN PARTETAN INCLEAR REPORT AUTHORITY
NOTIFICATION
Islamabal, the dif of blenth, Year
S.R.O. (I)/2016. In exercise of the powers conferred by Sections16(2)(a) and 56 of the Pakietae Nuclear Regulatory Authority Ordinance 2001 (III of 2001), Pakietan Nuclear Regulatory Authority is pleased to make and promight the following regulatories for the purpos of implementing actions prescribed in Section 16(2)(f) of the Ordinance.
1. Short Title, Extent and Commencement
 These regulations may be called Regulations on "Physical Protection of Nuclear Material(and Nuclear Installation(s)" - PAK/925
(2) These regulations shall extend to the whole of Pakistan.
(3) These regulations shall come into force at once.
 Definitions - In these regulations, unless there is anything reprogramt in the subject or context (a) "access delay" means the element of a physical protection system designed to increase adversary penetration time for entry into and/or exit from the nuclear installation or transport e nuclear material.
(b) "adv@mah" means an individual, group or organization that conducts or intends to conduct detrificential activities and against which physical protection system is designed. A advergaty may be an insider, outsider or collusion of both.
(c) "Authority" means the Pakistan Nuclear Regulatory Authority established under Section of the Ordinance (III of 2001).
(d) "contral alarm station" means an installation which provides for the complete an continuous alarm monitoring, assessment and communication with guards, facility management and response forces.
(c) "contingency plan" means prodefined set of actions for responses to unauthorized actinidicative of attempted unauthorized removal or sabotage, including threats thereof, designed t effectively counter such acts.
(f) "conveyance" means carriage used for transport of nuclear material by:
(i) road or rail



Responsibility

- Design, evaluate, maintain and implement PPS
- Implement any additional measures on the basis of DBT
- Effective against design objectives
- Safety and Physical Protection Interface
 - Assessment and managing the interface
 - For new installation, add physical protection in initial design
- Defense in Depth
 - Multiple layers of detection, delay and response



- Graded Approach
 - To protect against unauthorized removal
 - Categorization of nuclear material
 - Establishment of physical areas
 - Requirements for each physical area
 - To protect against sabotage
 - Identification of vital equipment, system
 - Most stringent requirements

• Graded Approach

- To protect against unauthorized removal during transport
 - Categorization of nuclear material
 - Common requirements
 - Stringent requirements
- Security culture



Testing and Evaluations

- Performance testing of PPS
- Effectiveness against the threat

Sustainability of PPS

- Operating Procedures
- HR Management
- Maintenance
- Configuration management
- Resource allocation and cost analysis

• Compensatory measures

- Identification in program
- Equivalent level of protection
- Change in PPS require approval from PNRA



Information Protection

- Identification and classification
- Protection of digital computers, communication system and network

Insider Mitigation

- Insider mitigation program
- defense in depth principle

• Contingency planning

- The plan addresses
 - measures to locate and recover lost/stolen nuclear material
 - measures to mitigate/minimize radiological consequences
 - Appropriate exercises
 - Coordination/assistance with response organizations



Future Challenges

- Development of regulatory guides for implementation of regulations
- Incorporation of changing threat into regulatory requirements e.g. use of drone technology for malicious purpose, cyber threat etc.
- Training Need Assessment of Inspectors as per rapidly changing technology



Conclusion

- Physical protection is regulated since long through requirements in various PNSRP/PNRA safety regulations as well as on the basis of IAEA INFCIRC/225
- PP requirements were realized to be more detailed based upon International best practices, National threat assessment, technological advancement and experience feed back etc.
- Regulation on Physical Protection of Nuclear material and Nuclear Installations is under review process and will go through process of evaluation through inter-agency consideration before finalization/approval by competent authority





