

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**
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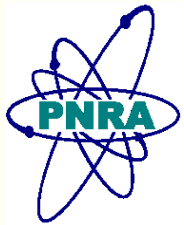


Introduction

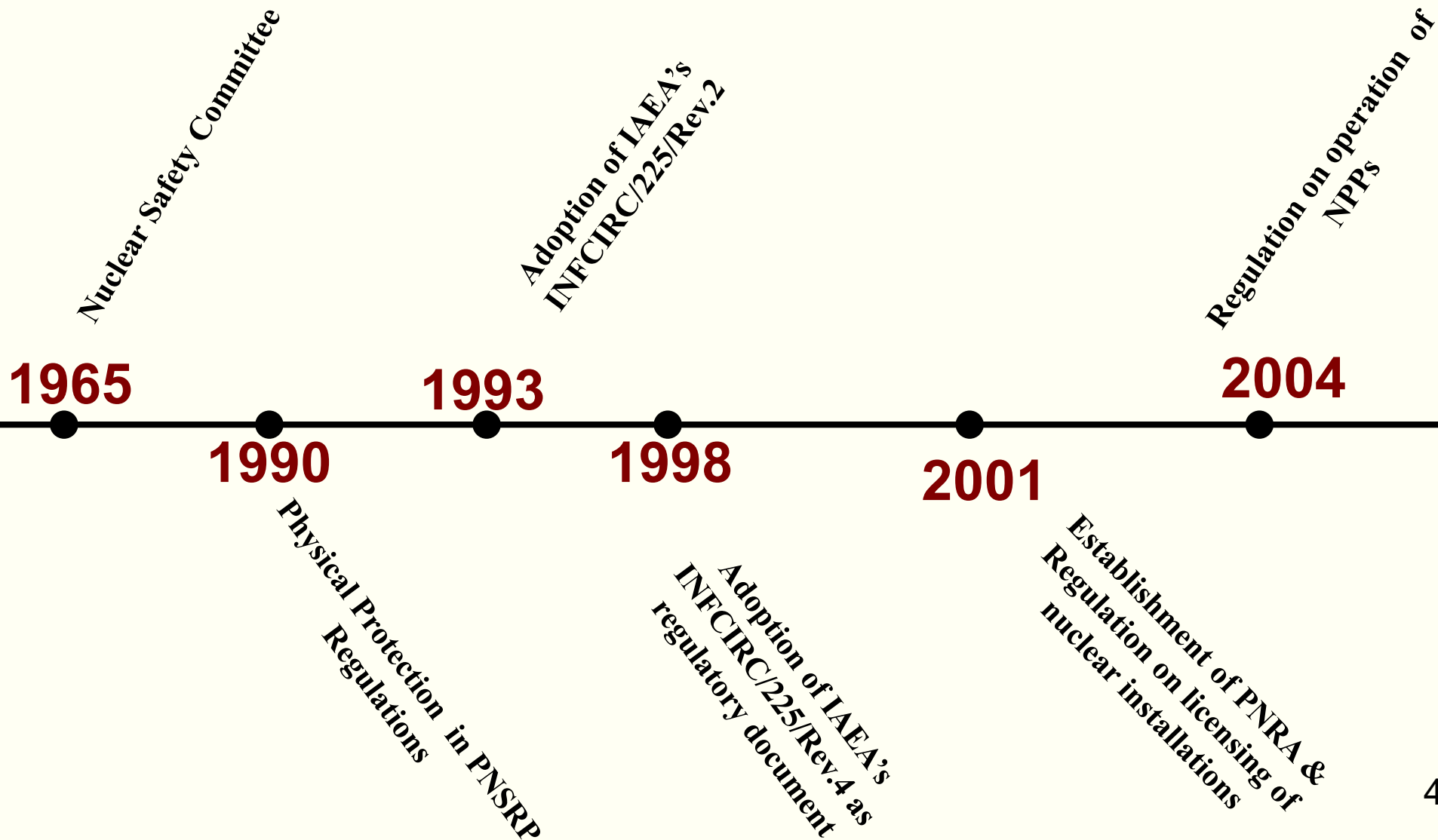
Amendment to CPPNM
Fundamental Principle C:
legislative and regulatory framework to govern physical protection

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





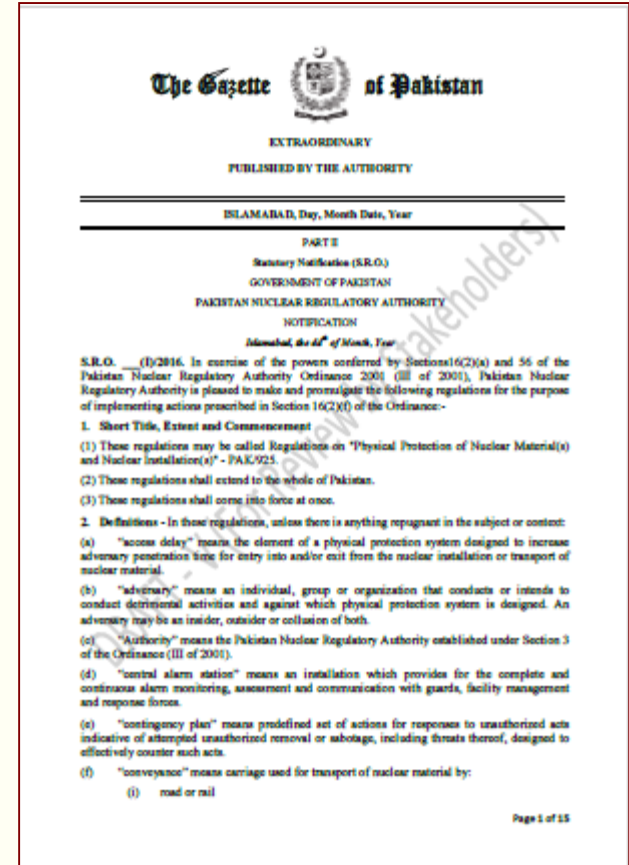
Basis for Development of Physical Protection Regulation

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



Regulations on Physical Protection

- 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





Regulations on Physical Protection

- **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



Regulations on Physical Protection

- **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**



Regulations on Physical Protection

- **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



Regulations on Physical Protection

- **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



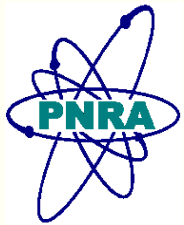
Future Challenges

- 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



Questions???

