

Sustainability of Physical Protection Equipment (PPE) Throughout the lifecycle of a Nuclear Facility



**Rashid Mahmood, Senior Scientific Officer
Pakistan Nuclear Regulatory Authority**



Outline

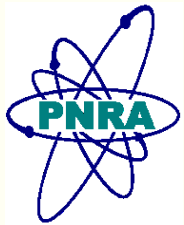
- Introduction;
- Identification of the Need and Objectives of PPE;
- Sustainable Operation of PPE;
- Role of NSSC for Sustainability of PPE;
- Conclusion.



Introduction

Major constituents of such a sustainability program of PPE:

- Identification of the need
- Selection and installation of PPE
- Formulation and implementation of repair and maintenance program
- Plan for operational and performance testing
- Re-evaluation of performance on periodic basis



Identification of the Need and Objectives of PPE

To identify the need for PPE, following aspects need to be considered:

- PP requirements;
- Objectives and goals for deployment of these equipment;
- Operational and performance objectives of equipment and their integration;
- Environment of the facility etc.

The security equipment performs functions that are mapped to the security goals





Project Management Process

Project Board

Project Initiation

Project Initiation document which includes:

- Risk Assessment
- Project Infrastructure checklist
- Stakeholder analysis
- Roles and Responsibilities

PM

Project Teams

Planning

- (1) Operational Requirements -1
- (2) Operational Requirements-2
- (3) Budget estimates
- (4) Project Schedule (WBS)
- (5) Project Management Plan
- (6) Project Scope (SoW, HR, etc.)
- (7) Detailed Risk & Stakeholder Analysis
- (8) Bidding and procurement process
- (9) Communication Plan

Execution

- (1) Risk Management
- (2) Issue Management
- (3) Scope Management
- (4) Change Management
- (5) Information management
- (6) Training of users, operators

Testing and Commissioning

- (1) Commissioning
- (2) User Acceptance testing
- (3) Snags List

Closing

- (1) Project Hand Over
- (2) Lessons learnt
- (3) Documentation
- (4) Post Project Reviews
- (5) Close Contracts
- (6) Preventive Maintenance Schedule

Warranty & Maintenance

(1) Management of Quality
(2) Project Control Database

Monitoring & Control



Sustainable Operation of Physical Protection Equipment/Systems

Integrated Management System (IMS) should be utilized to sustain, monitor, and control throughout operational life of PPS. The elements of an IMS include among others:

- Requirements management,
- Work direction and control,
- Resource management,
- Assurance activities and
- Sustainment and continuous improvement.



Role of NSSC for Sustainability of PPE

- Nuclear Security Support Centres are the national focal point for ownership of nuclear security knowledge and technical skills;
- Technical and scientific support services should be established along with human resource development;
- These services at the national level are established to ensure equipment lifecycle management and provide expert assistance

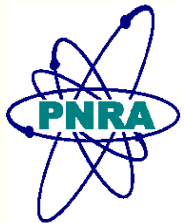


Center of Excellence for Nuclear Security in Pakistan (1/2)

Three pillars of CoE;

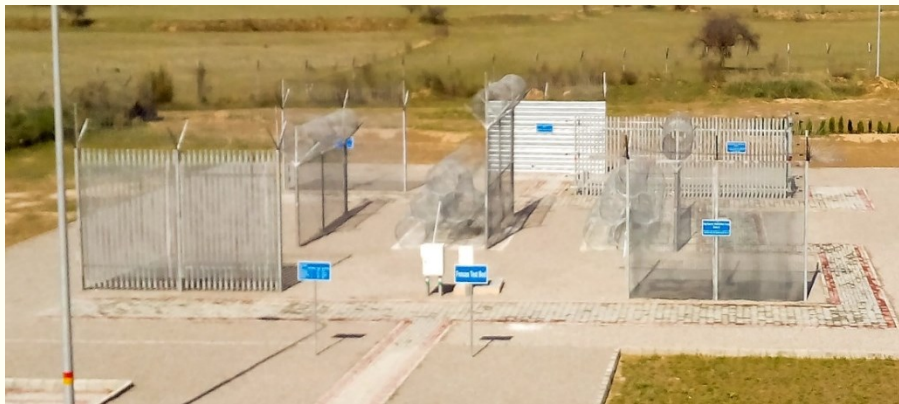
- Pakistan Centre of Excellence in Nuclear Security (PCENS)
- National Institute of Safety and Security (NISAS, PNRA)
- Pakistan Institute of Engineering and Applied Sciences (PIEAS, PAEC)





Center of Excellence for Nuclear Security in Pakistan (2/2)

- Three institutions are working together and provide education, trainings and technical support.
- Equipped with physical protection laboratories (interior and exterior), Detection equipment Labs, Test beds and infrastructure for human resource development.





Conclusion

- Sustainable systems and equipment need systematic approach from the concept phase to whole lifetime.

