

Regulatory Approach on Security of Nuclear Facilities in India

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Introduction

- The protection of nuclear installation, associated facilities and activities, against malevolent acts is an important aspect from nuclear security point of view. This involves prevention, protection and mitigation of consequences.
- The Physical Protection System (PPS) plays an important role for assuring adequate protection to nuclear power plants and projects.
- This is realized by well-defined technical and administrative measures. These measures of PPS are supervised and enforced through appropriate regulation.

Mission of AERB

- *The mission of Atomic Energy Regulatory Board is to ensure that the use of ionising radiation and nuclear energy in India does not cause undue risk to the health of people and the environment.*

Safety & Security

- Nuclear safety and nuclear security have a common purpose — the protection of worker, public and the environment



The acceptable risk is same whether the initiating cause is a safety or a security event

Role of Regulators

- Atomic Energy Regulatory Board (AERB) regulates Safety and Security aspects having bearing on safety of Nuclear and Radiation facilities.
- Technical and administrative measures of Physical Protection Systems (PPS) are supervised and enforced through appropriate regulation and licensing.
- To fulfil its responsibilities the regulatory body needs to
 - Establish clear regulatory objectives and understand how these are achieved
 - Define acceptable levels of physical protection of the nuclear facilities.
 - Monitor the licensees to ensure that they fulfil their responsibilities to provide appropriate levels of physical protection as envisaged in the design.
 - Periodically assess the functioning of physical protection system and its levels.

Regulatory Requirements

- In order to specify the regulatory requirements to meet nuclear security at NPPs, regulatory documents on Nuclear Security aspects are prepared.
- These regulatory documents form basis for review of security aspects of nuclear installations.
- The documents are prepared based on the operational experience and the available international documents on nuclear security
- The documents are revised as and when it is felt essential based on the current security scenarios, the developments taking place in the implementation of physical protection measures and the experience gained in this field both at the national and international levels.

Regulatory Documents

- AERB Manual on Security for Nuclear Facilities.
- Nuclear Security Requirements for NPPs.
- Regulatory Inspection of Security Aspects of NPPs.
- Stage wise requirement on Security aspects for Nuclear Projects.
- Reporting of Nuclear Security Events.
- Nuclear Security Requirements for Nuclear Fuel Recycle Facilities.
- Security of Radioactive Sources in Radiation Facilities.



PPS requirements for Projects

- Development of Site Specific Design Basis Threat (DBT) required for PPS design.
- PPS requirements at various consenting stages
 - Siting, Construction, Commissioning and Operation stage
- Vital Area Identification
 - Structured approach, taking inputs from Safety Analysis Report, based on logic diagrams to identify location of critical components, sabotage to which may cause unacceptable radiological consequences
- Security and Safety Interface
 - To ensure safety requirement do not jeopardise security and vice versa.

PPS requirements for Operating Plants

- Requirements at different layers
 - Main Plant Boundary (MPB), Operating Island and Vital Areas
- Other requirements
 - Central Alarm Station
 - Communication systems, Power supply.
 - Maintenance, Surveillance, Modification / upgradation of PPS.
 - Documents, Records & Standard Operating Procedures.
- Training
 - Security Awareness programmes
 - Training of operating and security personnel

Regulatory Review

- In India, multi-tier reviews are conducted for nuclear security similar to the review existing for nuclear safety.
- The regulatory review cover the design, operation and maintenance of nuclear security systems.
- Key aspects assessed during review
 - Establishment of different security zones and multi layers of protection
 - Establishment of Central Alarm Station (CAS), Distress Alarms and other security systems.
 - Standard Operating Procedures
 - Security organization
 - Safety & Security Interface
 - Surveillance and internal audit mechanism.



Regulatory Inspection of NPPs

- Regulatory Inspections (RI) are carried out by the Regulatory Body to ensure that the stipulations made / requirements specified are followed by the Licensee.
- RI on security aspects of NPPs
 - Established methodology similar to safety
 - Inspections at pre-defined frequency
 - Inspection findings/ recommendations are followed up.
 - Review of the observations in Security Committees and results considered for license renewal.



Regulatory Inspection of Nuclear Projects

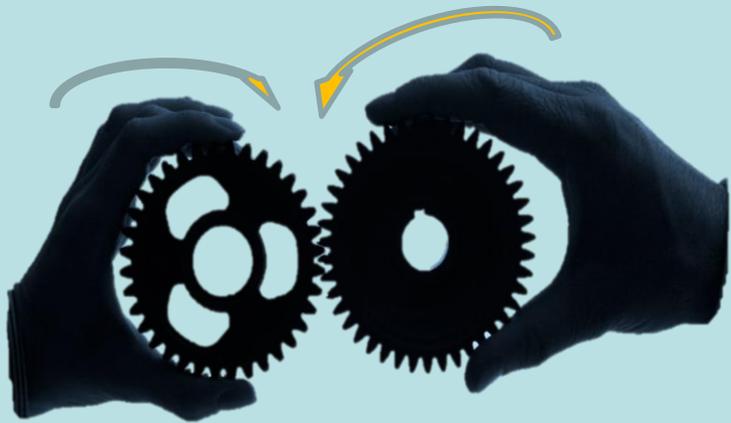
- Nuclear Security inspections at different stages of project-
 - Siting stage of the project
 - Construction stage
 - Commissioning stage
 - Operation Stage
- Inspections carried out at various consenting stages of the project or once in a quarter.
- Results are considered for giving clearances for next consenting stage.

Regulatory Inspections –Procedures & Records

- List of Vital Areas/ Inner Areas
- Procedures for :
 - Access controls of personnel- Visitors & Contractors
 - Vehicle & Material Movements
- Surveillance & Audit (Internal & external)
- Maintenance of PPS gadgets
- Standard Operating Procedures
- Reporting and Evaluation
- Contingency plans
- Records of Exercise, deficiencies and corrective actions
- Modifications & Up-gradation of PPS

Safety & Security Interface

Safety and Security should complement each other



Implementation of Safety and Security aspects may differ and affect each other in negative manner

Safety & Security Interface

In order to maximize the synergy between the nuclear safety and security:

- The safety/security aspects should be considered from the siting, construction and design stage of nuclear installations.
- Full security measures on site should be in place before commissioning phase of nuclear installations.
- Close cooperation of Safety specialists with security specialists.
- Safety security interface should be maintained during operation and maintenance by the Utility.

Nuclear Security Event Reporting

- Monitor the nuclear security of nuclear facilities.
- Nuclear security events may be associated with the system, structure, component of the facility, physical protection system (PPS) or administrative procedures for security.
- Nuclear Security Events are categorized as
 - Nuclear Security Event (NSE)
 - Significant Nuclear Security Event (SNSE)

Conclusion

- AERB has an established mechanism in place for regulatory review of security aspects of nuclear facilities.
- Integrated multi-pronged approach for PPS has evolved over the years to address complex and dynamic changes in security scenario.
- Adequate security coverage exists for nuclear facilities with regard to Physical Protection that is further improved based on experience and new developments.
- International requirements on security aspects of nuclear facilities in India are met with existing system of regulation and licensing by AERB.

Thank you..!

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