

# **DEVELOPING A ROBUST NUCLEAR SECURITY INFRASTRUCTURE IN A COUNTRY PLANNING OR OPERATING NUCLEAR POWER PLANTS**

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# A Robust Nuclear Security Infrastructure

A robust nuclear security infrastructure is one which has the effective ability to prevent, detect and respond to:

- theft,
- sabotage,
- unauthorized access,
- illegal transfer or
- other malicious acts

involving nuclear material, other radioactive substances (in use, storage and transport) or their associated facilities



# Background

- **Resolution 1373 (28 September 2001)** calls on Member States to work together urgently to prevent and suppress terrorist acts including through increased cooperation and full implementation of the relevant international instruments relating to terrorism.
- **Resolution 1540 (28 April 2004):** Affirms that proliferation of nuclear, chemical and biological weapons as well as their means of delivery constitutes a threat to international peace and security and it is necessary to initiate appropriate and effective actions against any threat to international peace and security



# BACKGROUND (continued)

- Resolution 1540 recognizes that states have taken measures to Account for, Secure and Physically protect sensitive material specified by CPPNM and IAEA CoC.
- States shall take and enforce effective measures by establishing control over sensitive materials and:
  - Develop and maintain appropriate effective measures to Account for and Secure such items in production, use, storage or transport
  - Develop and maintain appropriate physical protection measures
  - Develop and maintain appropriate effective border controls and law enforcement



# Efforts to Detect, Deter and Prevent the Illicit Trafficking and Brokering

- The [Convention on Physical Protection of Nuclear Materials \(and Facilities\)-CPPNM](#) and its amendment, are aimed to establish and maintain world-wide effective physical protection of nuclear material used for peaceful purposes (while in use, storage and transport) and of nuclear facilities used for peaceful purposes.
- Article 2A of the CPPNM aims to establish, implement and maintain an appropriate physical protection regime applicable to nuclear material and nuclear facilities under the jurisdiction of States.
- While implementing the amended CPPNM States shall apply 12 Fundamental Principles of Physical Protection



# Fundamental Principles of Physical Protection

- A: Responsibility of the State
- B: Responsibilities During International Transport
- C: Legislative and Regulatory Framework
- D: Competent Authority
- E: Responsibility of the License Holders
- F: Security Culture
- G: Threat
- H: Graded Approach
- I: Defence in Depth
- J: Quality Assurance
- K: Contingency Plans
- L: Confidentiality



# Efforts to Detect, Deter and Prevent the Illicit Trafficking and Brokering (Continued)

- The International Convention on Suppression of acts of Nuclear Terrorism (2005) deals with nuclear material & other radioactive substances, also the devices (IND, RDD) and acts intended to pose a state of terror in the general public.
- **Article-8:** For the purpose of preventing offences under this convention, State Parties shall make every effort to adopt appropriate measures to ensure the protection of radioactive material taking into account relevant recommendations and functions of the IAEA





# Efforts to Detect, Deter and Prevent the Illicit Trafficking and Brokering (Continued)

- **INFCIRC/225**  
a set of recommendations for the physical protection of nuclear material in use, storage and transport whether domestic or international and whether peaceful or military. most widely used document for guidance, standards and bilateral agreements on physical protection.
- **CoC on Safety and Security of Radioactive Sources and supplementary guidance on the Import and Export of Radioactive Sources**



# Implications of Nuclear Security for “NEWBUILDS”

- Insights of Report by Paul Wolfowitz on “Proliferation Implications of Global Expansion of Civil Nuclear Power”
- Expansion in Third World vs. Developed Countries
- The existing nuclear security infrastructure worldwide is a comprehensive one and can help such countries to model their own
- The most effective way is to establish an Independent Regulatory Authority which has oversight for both safety and security



# Implications of Nuclear Security for "NEWBUILDS" (Continued)

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- IAEA can help Member State to develop its own Roadmap for a sustainable infrastructure
- Example of IAEA help to Pakistan
- Security considerations must be considered from the stage of site evaluation onwards
- Regulatory Body should develop coordination with relevant organizations in the country



# Implications of Nuclear Security for "NEWBUILDS" (Continued)

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- The Regulatory Body should develop a National Resource Center for training of own staff, utility and related organizations and develop a link with IAEA for free flow of information and know-how.
- The Four-Quadrant Formula and IAEA Nuclear Safety & Security Standards can provide the basis for the proposed Resource Center.
- The organizations involved in the implementation of nuclear security regimes should give due consideration and priority to the security culture, its development and maintenance.
- The nuclear security regimes are heavily dependent on the quality management system aiming to promote confidence that specified requirements for all activities important to nuclear security are satisfied.



# Four-Quadrant Approach

## 1. Legal Basis and Regulatory Processes Competencies

- Legal Basis
- Regulatory Process
- Regulatory Guidance Documents
- License and Licensing Documents
- Enforcement Process

## 2. Technical Disciplines

- Basic Security Technology
- Applied Security Technology
- Specialized Security Technology

## 4. Personal and Interpersonal Effectiveness Competencies

- Analytical thinking, problem solving and decision making
- Personal Effectiveness
- Communication
- Team Work
- Management

## 3. Regulatory Practices

- Security focused analytical techniques
- Inspection Techniques
- Investigation Techniques

# Nuclear Security Series Framework November 2007

## NUCLEAR SECURITY FUNDAMENTALS

### RECOMMENDATIONS

### IMPLEMENTING GUIDES

### TECHNICAL GUIDANCE: REFERENCE MANUAL

Nuclear Security Objectives and Fundamental Principles

Recommendations for the Physical Protection of Nuclear Material and Facilities being also revision 5 of INFCIRC225

Recommendations for the physical protection of radioactive materials and associated facilities, including transport

Recommendations for Detection and Response

Nuclear Security Culture

Confidentiality of Nuclear Security Sensitive Information

State Regulatory and Operating Infrastructure Requirements for Security

Self Assessment of Nuclear Security Regimes

Development and Maintenance of a Design Basis Threat

Protection Against Sabotage

Security of Radioactive Sources

Protection Against an Insider Threat

Radioactive Waste Security

Security of Radioactive Material

Nuclear Security Risk Management

Security Risk Management and Emergency Response at Facilities

Security during the Transport of Radioactive Material

Security of Fissile Material in Transport

Nuclear Security at Major Public Events

Response to Unauthorized Acts involving Nuclear and Other Radioactive Material

#### ACTIVE

Nuclear Security Glossary

Model Regulations for Security of Nuclear and other Radioactive Material and Associated Nuclear Facilities

Engineering Safety Aspects of the Protection of Nuclear Power Plants against Sabotage No.4

Identification of Vital Areas at Nuclear Facilities

INPRO Manual on Physical Protection

Physical Protection of Research Reactors and Associated Facilities

Security of Information and Instrumentations & Control Systems at Nuclear Facilities

Nuclear Material Accountancy Systems at Facilities

Nuclear Forensics Support – No. 2  
Technical and Functional Specifications for Border Monitoring Equipment – No.1

Monitoring for Radioactive Material in International Mail – No.3

Identification of Radioactive Sources and Devices No. 5

Combating Illicit Trafficking in Nuclear and Other Radioactive Material No. 6

Detection and Response for Radioactive Materials at Seaports

#### PLANNED

Personal Security

Human Resource Qualification

Terms of Reference for the ITDB and Security Incidents Database

Technical Specifications for Physical Protection Systems

Physical Protection of NPPs

Physical Protection of Fuel Cycle Facilities

Consequence Assessment Methodology

Testing of PPS and Components and Response Exercise

Radioactive Material Accounting and Control

Security Design of Innovative Reactors

Verifying the Content in the Transport of Radioactive materials

Detection of Radioactive Materials at Locations Away from Borders

Developing a National Plan for Reacting to Unauthorized Acts Involving Nuclear and Other Radioactive Material

Published Active Review

Final Stages Planned



# Conclusion

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For countries planning or operating nuclear power plants; a robust nuclear security infrastructure is now achievable by virtue of the existence of international binding and non binding instruments and by the excellent internationally accepted norms and standards and guidance documents that are now available; as well as by the expert assistance from member states courtesy of the IAEA