SAND2010-8304P

Nuclear Security Recommendations on PHYSICAL PROTECTION OF NUCLEAR MATERIAL AND NUCLEAR FACILITIES (INFCIRC/225/Revision 5)

IAEA RTC Instructor Workshop
December 7, 2010
Ljubljana, Slovenia

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Outline of Presentation

- Brief history of INFCIRC/225
- Rationale for Revision 5
- Process of revision
- Structure of Revision 5
- Overview of changes by chapter
- Summary of new emphases in Rev.5
- Path forward

Brief history of INFCIRC/225

- 1972: Recommendations for the Physical Protection of Nuclear Material (gray book)
- 1975: INFCIRC/225, The Physical Protection of Nuclear Material, (blue book)
- 1977: Rev.1
- 1989: Rev.2
- 1993: Rev.3
- 1999: The Physical Protection of Nuclear Material and Nuclear Facilities, Rev.4
- 2010(?): Nuclear Security Series No. XX, Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Rev.5)

Rationale for Revision 5

- Increased threat of nuclear terrorism
- Consistency with Fundamental Principles of Physical Protection of Nuclear Material and Nuclear Facilities
- Evolution of methodologies, technologies, lessons learned, and good practices
- New IAEA Nuclear Security Series guidance documents
- Time period since last review in 1999

Process of revision

- IAEA NSS development process: modified
  - Consultancy Meetings (6 meetings, 25 MS)
    - 1st CM in July 2008
    - Initial draft text provided by small group of MS
  - Drafting Group Meetings (4 meetings, 7 experts)
  - 1st Technical Meeting (40 MS)
  - Member State 120-day review
  - 2nd Technical Meeting (44 MS)
    - 2nd TM in September 2010
    - Final draft text recommended by MS for publication by IAEA

Structure of Revision 5

Rev.5:

- Introduction
- Definitions
- PP Objectives
- State's PP Regime
- Theft
- Sabotage
- Transport

Rev.4:

- Introduction
- Definitions
- State's System of PP
- Categorization of NM
- Theft
- Sabotage
- Transport

Chapter 1: Introduction

- Nuclear Security Series structure:
  - Background: NSS context is 1 of 3 recommendations level documents sitting below Nuclear Security Fundamentals and above Implementing Guides and Technical Guidance
  - Purpose: recommended requirements for MS guidance and consideration
  - Scope: complementary to two other NSS recommendations documents for Radioactive Material and Associated Facilities, and for Material Out of Regulatory Control
  - Structure: explained on previous slide
- Footnote explaining term physical protection means the same thing as nuclear security of nuclear material and nuclear facilities

Chapter 2: Definitions

- 39 terms defined (17 in Rev.4)
- Defined terms that have specialized meaning in physical protection as compared to common dictionary are listed with their definition
- Terms used only once are defined in text
- All these terms will be included in IAEA Nuclear Security Glossary (to be published)
- Terms may have multiple definitions when used in other NSS documents
  - Definitions may depend on context (e.g. malicious act)
  - Multiple definitions will be included in Glossary

Chapter 3: Objectives of a State's Physical Protection Regime

- 4 Physical Protection Objectives taken from IAEA BOG 2001 document (incorporated into 2005 Amendment to the CPPNM):
  - To protect against unauthorized removal of nuclear material (theft)
  - To locate and recover missing (or stolen) nuclear material
  - To protect against (radiological) sabotage
  - To mitigate or minimize effects of sabotage

Chapter 4: Elements of a State's Physical Protection Regime for Nuclear Material and Nuclear Facilities

- Addresses 12 FPs in BOG/2001 and CPPNM/A, organized by Essential Elements in NS Fundamentals document
- State responsibility
  - FPA: Responsibility of the State
- International transport
  - FPB: Responsibilities during International Transport
- Assignment of physical protection responsibilities
- Legislative and regulatory framework
  - FPC: Legislative and Regulatory Framework
  - FPD: Competent Authority
  - FPE: Responsibility of the Licence Holders
- International cooperation and assistance

Chapter 4: State's PPR (2/2)

- Identification and assessment of threats
  - FPG: Threat
- Risk-based physical protection system and measures
  - FPH: Graded Approach
  - FPI: Defence in Depth
- Sustaining the physical protection regime
  - FPF: Security Culture
  - FPJ: Quality Assurance
  - FPL: Confidentiality
- Planning and preparedness for and response to nuclear security events
  - FPK: Contingency Plans

Chapter 5: Requirements for Measures Against Unauthorized Removal of Nuclear Material in Use and Storage

- Concern: use in the construction of a nuclear explosive device
- Categorization of nuclear material
  - Same table as in Rev.4
  - Applies only to theft (not sabotage)
  - Caution related to radiation level and footnote “e” (“self-protecting”)
- Additive requirements
  - General, Categories I/II/III, I/II, and I
- New section on requirements for locate and recover PP objective
  - State, operator

Chapter 6: Requirements for Measures Against Sabotage of Nuclear Facilities and Nuclear Material in Use and Storage

- Concern: unacceptable radiological consequences (defined by State)
- Categorization: there is not an agreed scheme (table) accepted by MS for use in Rev.5
- Qualitative approach: MS defines URC, considers NM/NF that may produce URC as result of sabotage, and defines protection levels and measures using graded approach
- Requirements for high consequence facilities including nuclear power reactors similar to Rev.4
- New section on requirements for (associated measures to) mitigate and minimize PP objective
  - Prevent further damage, secure the nuclear facility, and protect emergency equipment and personnel

Chapter 7: Requirements for Measures Against Unauthorized Removal and Sabotage of Nuclear Material During Transport

- Structure similar to combined Chapters 5 and 6
  - Theft: additive requirements
  - Locate and recover: State, carrier
  - Sabotage: additive measures to theft
  - Mitigate and minimize: State, carrier
- Recommendations are generally consistent with current practice, including a graded approach

Summary of new emphases in Rev.5

- Fundamental Principles
- Risk management approach
- Security and contingency plans
- Performance-based approach and testing
- Locate and recover missing nuclear material
- Mitigate and minimize sabotage consequences
- Graded approach for sabotage protection
- Protection against insider threat
- Nuclear material accountancy and control
- Protection against stand-off attacks
- Protection against computer threats
- Limited access area
- Upgrading of self-protection level
- Working definition of prudent management practice
- Redundancy measures for Central Alarm Station
- Safety-security interface

Path forward

- IAEA completes internal process for review, approval, and publication
  - Electronic publication on IAEA website in December 2010(?)
  - Printed document as IAEA Nuclear Security Series No. XX in 1QCY2011(?)
- Member States consider how to implement 225/5 into their legal and regulatory framework
- Development of IAEA NSS Implementing Guide for 225/5?