CERTIFICATE OF COMPLETION

This is to certify that

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has completed an on-line e-learning course on

Nuclear Material Accounting and Control (NMAC) for Nuclear Security

on the IAEA's Learning Management System

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Nuclear Material Accounting and Control (NMAC) for Nuclear Security

Subtopics

1. Introduction to NMAC
2. Managing the NMAC system
3. Accounting
4. Physical inventory taking
5. Material balance areas (MBA) and key measurement points (KMP)
6. Measurements and measurement quality control
7. Nuclear material control
8. Nuclear movements
9. Detection, investigation, and response to irregularities
10. Assessment and performance testing of the NMAC system

Learning Objectives

1.1 List legally binding international instruments in the area of nuclear security relevant to NMAC
1.2 List non-binding IAEA publications relevant to NMAC for nuclear security
1.3 Describe how NMAC contributes to nuclear security
1.4 Define an NMAC system
1.5 List primary NMAC objectives and purpose
1.6 Distinguish between accounting and control measures for nuclear security
1.7 Understand a basic objective of domestic NMAC for nuclear security and international safeguards
1.8 List the NMAC elements
2.1 Describe the overall organizational structure of an NMAC system in a nuclear facility
2.2 Explain the functions and responsibilities of the NMAC manager and staff
2.3 Describe the purpose and need for a sustainability programme
2.4 Describe importance of staffing and training qualified staff in performing NMAC activities
2.5 Recognize the need for NMAC documentation and procedures
2.6 Describe configuration management and its application to the NMAC system
3.1 State the importance of keeping complete records of transactions
3.2 List key information in the NMAC records system
3.3 List and describe the three types of records required
3.4 Describe record update and recordkeeping approach
4.1 State the importance of physical inventory taking (PIT)
4.2 State the purpose of calculating and evaluating material unaccounted for (MUF)
5.1 Describe material balance areas (MBA) and Key Measurement Points (KMP)
5.2 List material balance area (MBA) good practices
6.1 Define measurement systems
6.2 Explain how measurement systems increase nuclear security
6.3 List the characteristics of nuclear material that should be measured for accounting purposes
6.4 Describe measurement quality control programmes
6.5 State the minimum response to out of control measurement systems
7.1 State the objectives of nuclear material control
7.2 List examples of nuclear material control
7.3 Describe the relationship between nuclear material for NMAC and physical protection
8.1 Describe the importance of NMAC related to movement of nuclear material
9.1 Define and describe irregularity and relate the importance of detecting, responding, investigating, resolving, and reporting irregularities
9.2 List examples of irregularities
9.3 Describe typical response measures/procedures for investigating irregularities
10.1 Understand the purpose of assessment and performance testing