DRAFT

Document Preparation Profile (DPP)
Version 1.3 dated April 2015

1. IDENTIFICATION


Working ID: NST055

Proposed Title: Handbook for Designing and Implementing Physical Protection Systems for Nuclear Material and Nuclear Facilities

Proposed Action: New document based on IAEA-TECDOC-1276

Review Committee(s) or Group: NSGC

Technical Officer(s): Albert G. Garrett

2. BACKGROUND

The physical protection of nuclear material against unauthorised removal and of nuclear facilities and nuclear material against sabotage has long been a matter of national and international concern and cooperation. The IAEA has facilitated the development and publication of recommendations on the physical protection of nuclear material and nuclear facilities, these being first published as INFCIRC/225 in 1975 and revised from time to time since that date. More detailed guidance to assist Government authorities in instructing or advising operators on how to implement national requirements consistent with successive versions of INFCIRC/225 have been issued by the Agency as IAEA-TECDOC-967 (originally in 1997, Rev. 1 in 1999) and in IAEA-TECDOC-1276: “Handbook on the Physical Protection of Nuclear Material and Facilities”. TECDOC-1276 was published in 2002 and was largely based on material used at the IAEA International Training Course on Physical Protection.

Revision 5 of INFCIRC/225 was published as Nuclear Security Series No. 13(NSS No.13): Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities in 2011, and included a number of new or expanded concepts. The draft Implementing Guide for NSS No.13 (i.e., NST023, currently in development) incorporates and updates the contents of TECDOC-967. TECDOC-1276 was also taken into account in drafting Implementing Guide NST023, specifically in Chapter 4 on developing, implementing and maintaining an integrated physical protection system for nuclear facilities; however, TECDOC-1276 provides very detailed guidance for facility operators on the design, operation and maintenance of physical protection systems. Therefore, the drafters of NST023 recommended that TECDOC-1276 be revised. Because it was considered to contain potentially sensitive information, TECDOC-1276 was never publicly available, but copies were provided to Member States on request. In addition, at the time TECDOC-1276 was issued, there was no Nuclear Security Series. This document is planned as an NSS Technical Guidance that will be publicly available.

The NSS publications plan (“Roadmap”) approved by NSGC at its 5th Meeting in June 2014 indicated an intention to develop a document of this nature as Technical Guidance in the Nuclear Security Series.
3. JUSTIFICATION FOR THE PRODUCTION OF THE DOCUMENT

In recent years there have been significant changes to the international instruments, recommendations and guidance for the physical protection of nuclear material and nuclear facilities. Member States have requested additional detailed guidance regarding the responsibilities of the State’s competent authority to establish domestic nuclear security requirements, as well as guidance for nuclear facility operators (licencsees and licence applicants) and carriers to implement these requirements in a manner consistent with NSS No. 13. To develop comprehensive guidance on nuclear security, the relevant contents of TECDOC-1276 that have not been (or are not being) updated and included elsewhere in the NSS will form the basis for this Technical Guidance. It will supplement, at a lower, more technical level, the guidance in draft Implementing Guides NST023 and NST017 on “Security of Nuclear Material in Transport”.

Much of TECDOC-1276 continues to be a valuable resource for Member States and the content continues to serve as a key material for IAEA international, regional and national training courses on the physical protection of nuclear material and nuclear facilities. However, it needs updating to take account of NSS No.13, and of evolving threats and new/improved physical protection methods and technologies. To emphasise its comprehensive nature, this Technical Guidance will be titled “Handbook for Designing and Implementing Physical Protection Systems for Nuclear Material and Nuclear Facilities”.

4. OBJECTIVE AND SCOPE

The objective of the proposed Technical Guidance publication is to provide detailed, comprehensive guidance for operators and carriers, as well as to Member States and competent authorities, to assist them implementing the recommended requirements of NSS No.13 (INFCIRC/225/Rev.5) for an effective physical protection system. It will provide further detail on applying the guidance in the draft Implementing Guides NST023 and NST017, on how to establish or improve, implement and sustain physical protection systems, particularly in respect to the selection and integration of appropriate, effective measures (including equipment). As a Handbook, this Technical Guidance is intended to serve as the main reference, pointing users to other complementary IAEA physical protection guidance as necessary.

The scope of the proposed publication will be the physical protection of nuclear facilities and of nuclear material in use, storage and transport. In principle, it will be applicable to all stages in the lifetime of a nuclear facility, but it will focus primarily on the operational stages. It will include consideration of all of the functions of physical protection systems, including prevention of, detection of and response to nuclear security events. It will not cover response to any nuclear or radiological emergency that might result from a nuclear security event, and will not provide guidance on measures to locate and recover missing or stolen nuclear material, nor on associated measures to mitigate or minimize the radiological consequences of sabotage (except insofar as barriers are used to mitigate the consequences of an attack).

Because the publication is intended, unlike TECDOC-1276, to be publicly available, sensitive information will not be included.

5. PLACE IN THE OVERALL STRUCTURE OF THE RELEVANT SERIES AND INTERFACES WITH EXISTING AND/OR PLANNED PUBLICATIONS

The document is proposed as Technical Guidance in the Nuclear Security Series. It will be consistent with and support the Recommendations level document NSS No.13, “Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Rev.5)” and the Draft Implementing Guides NST023 and NST017. It will take note, as necessary, of other relevant Implementing Guides and Technical Guidance in the NSS (i.e. NSS
No. 4, 7, 8, 10, 16 and 17) as well as relevant Technical Guidance documents in development. It will also provide summary guidance on the evaluation of physical protection systems, pending development of detailed guidance in the Technical Guidance document, “Evaluation of Physical Protection System Effectiveness” (NST029).

Although intended for nuclear material and nuclear facilities, the concepts and guidance in this Handbook may also be applied to radioactive material and associated facilities/activities.

As Technical Guidance, this publication will not formally be an interface document with safety, but some informal coordination may be necessary, particularly with nuclear safety and transport safety.

6. OVERVIEW

The document will provide additional guidance to that in Draft Implementing Guides NST023 and NST017 relating to physical protection system requirements and design. It will provide detailed guidance on nuclear security management and implementation, from a system perspective, including physical protection techniques, technologies, equipment and procedures. TECDOC-1276 will provide the starting point; it will be updated, revised and where necessary expanded to reflect new emphases and topics in draft Implementing Guides, as well as current and emerging technological developments to address evolving threats.

A tentative outline content of the proposed Technical Guidance is as follows:

1. Introduction
   1.1 Background
   1.2 Purpose
   1.3 Scope
   1.4 Structure
2. Process of PPS Design and Analysis
   2.1 Prerequisites
   2.2 Define System Objectives
   2.3 Design the System
   2.4 Evaluate the System Design
   2.5 Re-design process
3. Physical Protection System
   3.1 Key Functions of the PPS
   3.2 System Integration
4. Physical Protection System Measures
   4.1 Intrusion Detection
   4.2 Video Technology
   4.3 Alarm Assessment
   4.4 Central Alarm Station
   4.5 Access Control Systems
   4.6 Search Systems
   4.7 Barriers
   4.8 Response
   4.9 Network design, Power supply and other support systems
   4.10 New/emerging technologies for PPS
5. Evaluation of PPS Effectiveness
   5.1 Overview of evaluation process
   5.2 Performance testing of technical measures (individual components system elements)
   5.3 Evaluation of personnel, plans and procedures, including protection against insiders
   5.4 Overall System Evaluation
7. Security of Nuclear Material in Transport
8. Physical Protection aspects addressed in detail in other existing or planned NSS documents

7. **PRODUCTION SCHEDULE:** Provisional schedule for preparation of the document, outlining realistic expected dates for:

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8. **RESOURCES**

The development of this document will involve preparation of a draft document over the course of up to three CMs and its review by IAEA staff. The draft will then be reviewed and approved by the Departmental Coordination Committee and NSGC before and after the 120 day review by Member States. The project will be funded by extra-budgetary funds.