1. IDENTIFICATION


Working ID: NST051

Proposed Title: Security during the Lifetime of a Nuclear Facility

Proposed Action: new document

Review Committee(s) or Group: NSGC, all SSCs [tbc]

Technical Officer(s): Albert G. Garrett

2. BACKGROUND

Nuclear facilities have long lifetimes, which can create complex challenges when moving from one stage/phase of a facility’s life to the next (siting, construction, operation, shutdown, decommissioning). Therefore, prior to the next stage, careful consideration of potential changes to nuclear security requirements should be evaluated prior to implementation. This concept supposes nine different phases of a nuclear facility lifetime:

1. Regulatory infrastructure and requirements development,
2. Site selection/evaluation,
3. Generic design and procurement specification,
4. Site specific design,
5. Construction,
6. Commissioning,
7. Operation,
8. Shutdown (extended shutdown, and/or cold shutdown), and
9. Decommissioning and release from regulatory control.

There are gaps in the NSS series publications for guidance on nuclear security requirements for nuclear facilities during several of the nine facility phases identified above. NSS No. 13 provides overarching recommendations; but no specific guidance for Phases 2, 3, and 4; while NSS No.19 provides recommendations and no real specific guidance for Phase I.

3. JUSTIFICATION FOR THE PRODUCTION OF THE DOCUMENT

This guide is intended to provide guidance during the other phases of the life of a facility, from concept to decommissioning. It will provide guidance for States, regulatory bodies and other competent authorities, designers/constructors, and operators of all types of nuclear facilities with necessary information to develop and implement a comprehensive nuclear security programme.

This subject was identified as a gap to be filled in the NSS Roadmap approved at the 5th meeting of the Nuclear Security Guidance Committee (NSGC), June 2014. In addition, the Advisory Group on
Nuclear Security (AdSec) and many Member States have expressed an interest in and suggested such a document be produced.

4. OBJECTIVE AND SCOPE

The objective of the proposed publication is to provide comprehensive guidance to States on implementing the recommendations in NSS No. 13, specifically topics 3.27 and 3.28. The proposed guide will provide necessary information to develop and implement comprehensive nuclear security for nuclear facilities at all stages of the life of a facility, from concept to decommissioning. This guide will develop the concept that includes several key messages for ensuring the nuclear security of nuclear facilities:

1. Nuclear security should be fully integrated during the earliest phases of system design and built-in to facility systems upfront;
2. Nuclear security principles should apply to facility siting and design to identify and incorporate appropriate features that enhance facility nuclear safety and security, or that facilitate the implementation of nuclear safety, security, and safeguards measures; and
3. Nuclear security system design requirements should be considered as important as safety system design requirements.

The scope of this guide will be for all nuclear facilities (i.e. facilities in which nuclear material is produced, processed, used, handled, stored or disposed of) at all phases of the facility lifetime from concept to decommissioning. It will be apply to facilities on the front end of the nuclear fuel cycle, but will be especially applicable to nuclear fuel cycle facilities starting from power generation onward in the fuel cycle. In addition, the concepts and guidance developed in this guide may also be used to apply to other facility types (Radioactive Material and Associated Facilities).

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

The document will be an IAEA Nuclear Security Series (NSS) publication and is intended to be a third tier guide, Implementing Guide, within the hierarchy of NSS publications. It will provide support to the Implementing Guide currently in development, known as NST023, “Physical Protection of Nuclear Material and Nuclear Facilities”. NST023, once published, will provide implementation guidance for the recommendations level document, NSS No. 13, “Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)”.

This Implementing Guide will not provide guidance on nuclear safety or safeguards aspects, but in addressing safety–security interfaces will take account of relevant safety standards, particularly the General and Specific Safety Requirements on site evaluation, emergency preparedness and response, design, construction, commissioning and decommissioning. It is proposed that this publication will be an interface document with all SSCs, and will include particularly coordination with NSNI and the IEC. It will also take account of the nuclear security aspects of the practices described in IAEA Nuclear Energy Series, No. NP-T-2.8, “International Safeguards in Nuclear Facility Design and Construction”.

6. OVERVIEW

The concept of Security during the Lifetime of a Nuclear Facility is closely linked to previous concepts known as: “Security by Design” and “Intrinsic Security”. The proposed publication will provide guidance to States for implementing the recommendations in NSS No. 13 (INFCIRC/225/Revision 5), specifically topics 3.27 and 3.28.
3.27. The operator should prepare a security plan as part of its application to obtain a licence. The security plan should be based on the threat assessment or the design basis threat and should include sections dealing with design, evaluation, implementation, and maintenance of the physical protection system, and contingency plans. The competent authority should review and approve the security plan, the implementation of which should then be part of the licence conditions. The operator should implement the approved security plan. The operator should review the security plan regularly to ensure it remains up to date with the current operating conditions and the physical protection system. The operator should submit an amendment to the security plan for prior approval by the competent authority before making significant modifications, including temporary changes, to arrangements detailed in the approved security plan. The competent authority should verify the operator’s compliance with the security plan.

3.28. For a new nuclear facility, the site selection and design should take physical protection into account as early as possible and also address the interface between physical protection, safety and nuclear material accountancy and control to avoid any conflicts and to ensure that all three elements support each other.

Below is a draft outline that will be modified and expanded during the consultancy meetings. This guide may be co-sponsored by other organizations, not yet determined.

Nuclear Security during the Lifetime of a Nuclear Facility
1. Introduction
2. Objectives
3. Scope
4. Background
5. Nuclear Security Facility Life Cycle
   5.1 Regulatory Infrastructure and requirements development
   5.2 Site Selection/Evaluation
   5.3 Generic design (procurement specification)
   5.4 Site Specific Design
   5.5 Construction
   5.6 Commissioning
   5.7 Operation
   5.8 Shut down
   5.9 Decommissioning and release from regulatory control
6. Safety–Security Interfaces
7. Abbreviations
8. References

7. PRODUCTION SCHEDULE
Provisional schedule for preparation of the document, outlining realistic expected dates for (fill the column corresponding to your proposed document and delete the other columns):
<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Approximate date</th>
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</thead>
<tbody>
<tr>
<td>STEP 1</td>
<td>Preparing a DPP</td>
<td>DONE</td>
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<tr>
<td>STEP 2</td>
<td>Approval of DPP by the Coordination Committee</td>
<td>September 2014</td>
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<td>STEP 3</td>
<td>Approval of DPP by the relevant review Committees</td>
<td>November 2014</td>
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<td>STEP 4</td>
<td>Approval of DPP by the CSS</td>
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<tr>
<td>STEP 5</td>
<td>Preparing the draft</td>
<td>August 2015</td>
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<td></td>
<td>Technical Meeting</td>
<td>Q4 2015</td>
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<td>STEP 6</td>
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<td>March 2016</td>
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<td>STEP 7</td>
<td>Approval by the relevant review Committees for submission to Member States for comments</td>
<td>June 2016</td>
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<td>STEP 8</td>
<td>Soliciting comments by Member States</td>
<td>Ends October 2016</td>
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<td>STEP 9</td>
<td>Addressing comments by Member States</td>
<td>November 2016</td>
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<td>STEP 10</td>
<td>Approval of the revised draft by the Coordination Committee review in NS-SSCS</td>
<td>March 2017</td>
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<td>STEP 11</td>
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<td>June 2017</td>
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<td>STEP 12</td>
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<tr>
<td>STEP 13</td>
<td>Establishment by the Publications Committee and/or Board of Governors (for SF and SR only))</td>
<td>Q3 2017</td>
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<td>STEP 14</td>
<td>Target publication date</td>
<td>December 2017</td>
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8. RESOURCES

It is estimated that development of the new document would involve approximately 60 weeks of effort by Member States experts. This is based upon assuming 3 one-week expert meetings involving about an average of 10 experts and an average of 2 weeks of work per expert between meetings. Secretariat resources involved are estimated at 16 weeks of effort by agency staff plus support for expert travel and honoraria for experts whose effort is not otherwise funded.