

**SPESS F**  
**Document Preparation Profile (DPP)**  
Version ~~0-1~~ dated ~~17 March~~ 27 May 2022

## 1. IDENTIFICATION

**Document Category:** Specific Safety Guide

**Working ID:** DS539

**Proposed Title:** Licensing Process for Nuclear Installations

**Proposed Action:** Full Revision of the IAEA Safety Guide SSG-12 “Licensing Process for Nuclear Installations” (2010)

**Review Committee(s) or Group:** NUSSC, RASSC, TRANSSC, WASSC, EPreSC and NSGC

**Technical Officer:** Miguel SANTINI (RAS/NSNI)

## 2. BACKGROUND

The IAEA Safety Guide SSG-12 “Licensing Process for Nuclear Installations”, issued in 2010, has constituted an important roadmap for regulatory bodies in the development of the licensing process for nuclear installations. As is, it remains a proven guide for regulatory bodies in the majority of the licensing cases for nuclear installations. It is believed, however, that the Safety Guide’s users will benefit from an update to include adjustments and additional guidance in light of the recent developments.

The issuance of the revised version of GSR Part 1 in 2016 and the addition of GSG-12 and GSG-13 in 2018, providing up to date guidance on the organization of regulatory bodies and their regulatory functions, have made evident that a revision of SSG-12 is needed.

In addition, the Fukushima Daiichi accident, which occurred after the publication of SSG-12, resulted in lessons related to the importance of a robust licensing process by the regulatory bodies. These lessons were used to improve the licensing practices by numerous States.

## 3. JUSTIFICATION FOR THE PRODUCTION OF THE DOCUMENT

An analysis of the scope and content of the Safety Guide concluded that it is necessary to revise SSG-12 to include adjustments to the existing recommendations and to provide additional recommendations related to:

- 1) Changes driven by Safety Requirements publications and Safety Guides published after 2010, such as GSR Part 1 (Rev. 1), GSR Part 3, GSG-12 and GSG-13. For instance, SSG-12 was partially superseded by GSG-13 relating to the functions and processes of the regulatory body;
- 2) Recent lessons learned in the implementation of the licensing process for nuclear power plants by embarking countries and countries in the process of deploying new nuclear power plants, documented respectively in:

- TECDOC-1947, Integrated Nuclear Infrastructure Review (INIR): Ten Years of Lessons Learned (2021);
  - TECDOC-1948, Experiences of Member States in Building a Regulatory Framework for the Oversight of New Nuclear Power Plants: Country Case Studies (2021).
- 3) Changes needed to provide suitable recommendations for the application of the Safety Requirements to the licensing of small modular reactors (SMRs). For example:
- The SMR Regulators' Forum has proposed necessary changes in the licensing process when considering newly proposed deployment models for SMRs. These proposed changes are also aligned with the issues identified the Safety Report on Review of Applicability of the IAEA Safety Standards to Non-Water Cooled Reactors and Small Modular Reactors (to be published in 2022).
  - The SMR Regulators' Forum has also proposed additional guidance for collaboration between regulatory bodies when a licensing process is applied simultaneously to SMR components or to transportable SMRs by two or more jurisdictions. This is also in line with the issues identified in the forthcoming Safety Report.

4) The need to provide additional guidance on use of a graded approach in the application of safety requirements on licensing of research reactors, their ancillary facilities, and subcritical assemblies in accordance with their potential hazards.

5) The need to provide additional guidance on the use of a graded approach in the application of safety requirement on licensing of nuclear fuel cycle facilities.

4)6) For the security–safety interface, references to a the TECDOC Technical Report on Regulatory Oversight of the Nuclear Safety and Nuclear Security Interfaces in Nuclear Power Plant (new publication in preparation) will be added. The publication is expected to be released in 2022.

5)7) The consideration of safeguards requirements early in the design process ('safeguards by design'), in the context of safety and security related requirements ('3S'), will be presented as a best practice regulatory consideration in the pre-licensing process.

#### **4. OBJECTIVE**

The objective of this Safety Guide is to provide recommendations for regulatory bodies on all steps of the licensing process for nuclear installations.

It is expected that the revised Safety Guide will promote consistency on the licensing processes for nuclear installations and collaboration among regulatory bodies of different States when involved in the licensing of the same nuclear installation.

#### **5. SCOPE**

This Safety Guide addresses all steps in the licensing process for nuclear installations, namely: siting and site evaluation, design, construction, commissioning, operation, decommissioning, and release from regulatory control.

It addresses all nuclear installations as defined in the IAEA Safety Glossary (2018 Edition), namely: nuclear power plants; research reactors (including subcritical and critical assemblies) and any adjoining radioisotope production facilities; conversion facilities; uranium enrichment facilities; nuclear fuel fabrication facilities; facilities for the reprocessing of spent fuel; storage facilities for spent fuel; facilities for the predisposal management of radioactive waste arising from nuclear fuel cycle facilities; and nuclear fuel cycle related research and development facilities.

The revision of the Safety Guide expands the content to include updated considerations of newly proposed reactor deployment models, in particular deployment models for SMRs, and will address matters such as factory fuelling and transportation to the final destination in a different State. “Deployment model” is understood as the approach taken for the deployment of a NPP that will impact the general ownership of the NPP, the responsibility for the lifetime of the NPP including operation, decommissioning and management of spent fuel and radioactive waste, and the responsibility for liability for nuclear damage in case of a nuclear accident.

Consideration will be given to address the necessity of changes or adjustments to the licensing process in the case of licensing of ~~F~~first of a ~~K~~kind (FOAK) reactors (~~DPP-DS537 under development~~ **Safety demonstration of first of a kind technology in reactor designs**).

New Appendixes will be added to the Safety Guide with recommendations that will support regulatory bodies from different States involved in the licensing of the same type of installations to collaborate to reduce regulatory duplication, while maintaining independence and levels of due diligence. The recommendations may also be applied to reduce regulatory burden for designs that have been licensed by the regulatory body of one State which is proposed for a licence in a different State.

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

This Guide will interface with at least the following IAEA Safety Standards Series and other publications (the list is not intended to be final or exhaustive):

- 1) GSR Part 1 (Rev. 1) – Governmental, Legal and Regulatory Framework for Safety (2016)
- 2) GSR Part 2 - Leadership and Management for Safety (2016)
- 3) GSR Part 3 - Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards (2014)
- 4) GSR Part 4 (Rev. 1)- Safety Assessment for Facilities and Activities (2016)
- 5) GSR Part 6 - Decommissioning of Facilities (2014)
- 6) GSR Part 5 – Predisposal Management of Radioactive Waste (2009, DPP for revision under development)
- 7) GSR Part 7 - Preparedness and Response for a Nuclear or Radiological Emergency (2015)

8) SSR-1 - Site Evaluation for Nuclear Installations (2019)

~~8)9)~~ SSR-2/1 (Rev. 1) - Safety of Nuclear Power Plants: Design (2016)

~~9)10)~~ SSR-2/2 (Rev. 1) - Safety of Nuclear Power Plants: Commissioning and Operation (2016, [being updated, DS532](#))

~~10)11)~~ SSR-3 – Safety of Research Reactors (2016)

~~11)12)~~ SSR-6 (Rev. 1) - Regulations for the Safe Transport of Radioactive Material (2018)

~~12)13)~~ SSR-4 – Safety of Nuclear Fuel Cycle Facilities (2017)

~~12)14)~~ [SSR-5 - Disposal of Radioactive Waste \(2011\)](#)

~~13)15)~~ SSG-48 - Ageing Management and Development of a Programme for Long Term Operation of Nuclear Power Plants (2018)

~~14)16)~~ GSG-3: The Safety Case and Safety Assessment for the Predisposal Management of Radioactive Waste (2013)

~~15)17)~~ GSG-6 - Communication and Consultation with Interested Parties by the Regulatory Body (2017)

~~16)18)~~ GSG-9 - Regulatory Control of Radioactive Discharges to the Environment (2018)

~~17)19)~~ RS-G-1.8, Environmental and Source Monitoring for Purposes of Radiation Protection. (2005, being updated, DS505)

~~18)20)~~ GSG-10 - Prospective Radiological Environmental Impact Assessment for Facilities and Activities (2018)

~~19)21)~~ GSG-12 - Organization, Management and Staffing of the Regulatory Body for Safety (2018)

~~20)22)~~ GSG-13 - Functions and Processes of the Regulatory Body for Safety (2018)

~~21)23)~~ SSG-10 - Ageing Management for Research Reactors (2010, [being updated, DS509](#))

~~22)24)~~ SSG-15 (Rev 1) - Storage of Spent Nuclear Fuel (2020)

~~23)25)~~ SSG-20 – Safety Assessment for Research Reactors and Preparation of the Safety Analysis Report (Rev. 1, [being updated, DS510](#))

~~24)26)~~ SSG-25 - Periodic Safety Review for Nuclear Power Plants (2013, [being updated, DS535](#))

~~24)27)~~ [SSG-24 - Safety in the Utilization and Modification of Research Reactors \(2012\)](#)

~~25)28)~~ SSG-28 - Commissioning for Nuclear Power Plants (2014)

~~26)29)~~ SSG-38 - Construction for Nuclear Installations (2015)

~~27)30)~~ SSG-47 - Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities (2018)

~~28)31)~~ NSS No. 45-T - Regulatory Authorization for Nuclear Security During the Lifetime of a Nuclear Facility (in preparation)

~~29)32)~~ INSAG-26 - Licensing the First Nuclear Power Plant (2012)

~~30)33)~~ TECDOC – Regulatory Oversight of the Nuclear Safety and Nuclear Security Interfaces in Nuclear Power Plants (in preparation)

NSNI/RRSS and NSRW/WES will be consulted to ensure that all types of nuclear installation are properly addressed, and NSRW/RIT will be consulted to ensure that possible impacts on the IRRS reviews are properly considered. NSNS/MAFA will be consulted to ensure that aspects relating to the interface between safety and security in licensing are properly addressed. Similarly, SGCP/CCA and the Office of Legal Affairs (OLA) will be consulted on matters related to the interface between safety and safeguards in licensing. NS-IEC will be involved in the drafting and review to ensure emergency preparedness and response aspects are appropriately addressed throughout the licensing process.

## 7. OVERVIEW

It is planned to keep the structure and the table of contents of the revised Safety Guide similar to the current Safety Guide SSG-12. The Safety Guide will retain its overall structure at the section level. The planned table of contents incorporating the new subjects is as follows:

1. INTRODUCTION

2. GENERAL RECOMMENDATIONS ON THE LICENSING PROCESS

3. STEPS OF THE LICENSING PROCESS

APPENDIX I: EXAMPLES OF DOCUMENTS TO BE SUBMITTED TO THE REGULATORY BODY

APPENDIX II: SPECIFIC GUIDANCE FOR LICENSING OF SMALL MODULAR REACTORS

APPENDIX III: SPECIFIC GUIDANCE FOR LICENSING OF ~~OTHER TYPES OF~~ NUCLEAR INSTALLATION OTHER THAN NPP AND SMR (IF ANY)

REFERENCES

CONTRIBUTORS TO DRAFTING AND REVIEW

Provisional schedule for preparation of the document, outlining realistic expected dates for each step

STEP 1: Preparing a DPP	DONE
STEP 2: Approval of DPP by the Coordination Committee	April 2022
STEP 3: Approval of DPP by the relevant review Committees	June 2022
STEP 4: Approval of DPP by the CSS	November 2022
STEP 5: Preparing the draft	<a href="#">2Q-4Q 2023</a>
STEP 6: Approval of draft by the Coordination Committee	<a href="#">3Q-1Q 2024</a>
STEP 7: Approval by the relevant review Committees for submission to Member States for comments	<a href="#">4Q-2Q 2023</a> <a href="#">2024</a>
STEP 8: Soliciting comments by Member States	<a href="#">3-4Q 2024</a>
STEP 9: Addressing comments by Member States	<a href="#">2Q-4Q 2024</a>
STEP 10: Approval of the revised draft by the Coordination Committee Review in NSOC-SGDS (Technical Editorial review)	<a href="#">3Q-1Q 2024</a> <a href="#">2025</a>
STEP 11: Approval by the relevant review Committees	<a href="#">4Q-2Q 2025</a> <a href="#">4</a>
STEP 12: - Submission to the CSS - Submission in parallel and approval by the Publications Committee - MTCO Editing - Endorsement of the edited version by the CSS	<a href="#">2Q-4Q 2025</a>
STEP 13: Establishment by the Publications Committee and/or Board of Governors (for SF and SR only))	N/A
STEP 14: Target publication date	<a href="#">3Q-1Q 2025</a> <a href="#">2026</a>

## 8. RESOURCES

It is estimated that the full revision of the Safety Guide would involve approximately 60 weeks of effort by experts. This is based upon assuming 5 one-week consultant's meetings, involving no more than 6 experts and an average of one week of work per expert between meetings.

Agency resources involved are estimated at 15 weeks of effort by the Technical Officers from NSNI/RAS. Additionally, it is estimated that a total of 10 weeks of effort from TOs from other sections will be required for consultation (Including NSNI/SAS, NSNI/RRSS, NSRW/WES, SNRW/RIT, NSNS/MAFA, SCCP/CCA, NS/IEC, and OLA).