

Document Preparation Profile (DPP) Revision 1

1. IDENTIFICATION

Document Category: Safety Guide

Working ID: DS 486

Proposed Title: Establishing the Safety Infrastructure for a Nuclear Power Programme
(Rev. 1)

Proposed Action: Revision by amendment of a Safety Guide, SSG-16 Establishing the Safety Infrastructure for a Nuclear Power Programme

Review Committee(s): NUSSC, RASSC, TRANSSC, WASSC, NSGC

Technical Officer(s): David Graves, RAS

2. BACKGROUND

The IAEA Action Plan on Nuclear Safety requested, under Action 6 – IAEA Safety Standards, the IAEA to review and strengthen its safety standards and to improve their implementation.

In response, the IAEA Safety Requirements were reviewed in a systematic manner, in the light of the findings of an analysis of the accident at the Fukushima Daiichi nuclear power plant (NPP). The intention of the review was to determine whether revisions were necessary to reflect any of the findings. The Commission on Safety Standards reviewed the work and concluded that the current Safety Requirements have no significant areas of weakness, but certain amendments were proposed to strengthen the requirements and to facilitate their implementation.

The Action Plan also addresses, under Action 8, the needs for MSs embarking on a nuclear power programme to create an appropriate nuclear infrastructure based on IAEA safety standards and relevant guidance.

IAEA Safety Guide SSG-16, “Establishing the Safety Infrastructure for a Nuclear Power Programme”, was published in December 2011 and is being extensively used by the IAEA to provide assistance to ‘embarking countries’ — those countries considering embarking and preparing to embark on a nuclear power programme.

The purpose of SSG-16 is to facilitate the gradual implementation of the IAEA Safety Requirements through the 3 initial phases of a nuclear power programme. This phased approach considers that in phase 1 the focus is to ensure government awareness of the nuclear safety requirements to support making an informed decision about nuclear power. Phase 2 focuses on the planning and on the establishment of the various institutions (e.g. the regulatory body and the NPP operating organization) and specifying the safety requirements for the future NPP. In phase 3, the NPP construction starts and the full implementation of the relevant safety requirements need to be completed.

The Safety Guide was also used for the development of a new module that has been introduced in the IAEA’s Integrated Regulatory Review Service and applied in missions to embarking countries.

In June 2013, the Safety Standards Committees approved for submission to Member States for comment the ‘revision through amendment’ of five Safety Requirements as described in DS462.

The 5 Safety Requirements proposed for revision were:

- GSR Part 1 on Governmental, Legal and Regulatory Framework for Safety
- NS-R-3 on Site Evaluation for Nuclear Installations
- SSR-2/1 on Safety of Nuclear Power Plants: Design
- SSR-2/2 on Safety of Nuclear Power Plants: Commissioning and Operation
- GSR Part 4 on Safety Assessment for Facilities and Activities

In addition, the IAEA is also revising the Safety Requirements GS-R-3, The Management System for Facilities and Activities (DS456) and GS-R-2, Preparedness and Response for a Nuclear or Radiological Emergency (DS457).

In December 2013, the IAEA received comments from Member States on the proposed revisions in DS462. The comments were analysed by the Secretariat. In February 2014, a working group of NUSSC reviewed the Secretariat's analysis and the Secretariat finalized DS462 for submission to the Safety Standards Committees in June–July 2014 and to CSS in November 2014.

3. JUSTIFICATION FOR THE PRODUCTION OF THE DOCUMENT

In the analysis of the accident at Fukushima Daiichi NPP in 2011, there have been significant safety insights to be considered by countries operating NPPs and by those developing the safety infrastructure for a new nuclear power programme.

These safety insights are reflected in the revision of the IAEA Safety Requirements, the results of the IAEA Nuclear Safety Action Plan, and the IAEA Director General's Report on the Accident at the Fukushima Daiichi NPP (in preparation).

The safety requirements need to be considered early in the establishment of a safety infrastructure for a nuclear power programme. Therefore, aligning SSG-16 with the revision of safety requirements allows embarking countries to consider safety implications from the Fukushima Daiichi NPP accident through all 3 initial phases of a nuclear power programme.

In October 2013, the IAEA organized a CM (feedback report in [annex 1](#)) to review SSG-16 against the revisions proposed in the Safety Requirements (DS462).

The results of the CM indicated that a revision of SSG 16, in line with the changes in the Safety Requirements, is justified and timely and that it would provide new and valuable guidance to countries considering and preparing to embark on a nuclear power programme.

The experts also suggested that a revision of SSG-16 could be realized (by amendment) without changing the existing structure of 'actions' proposed for implementation during the three initial phases of the development of the safety infrastructure for a nuclear power programme.

The secretariat also analyzed the proposed revision of the safety requirements (DS 462) and identified those that will need to be reflected in SSG-16 revision. Moreover, the analysis of feedback from applications of SSG-16 in Integrated Regulatory Review Services (IRRS) missions, workshops, self-assessments and peer reviews identified the need for additional clarification for the implementation of some specific actions. The proposed revision would provide an opportunity to implement these changes.

The nature of SSG-16 is special, in that it provides practical guidance for a phased application of the IAEA safety standards in the three phases of development of a nuclear power programme. Therefore, it is important to revise this Safety Guide regularly to keep it consistent with the full set of relevant Safety Requirements.

4. OBJECTIVE AND SCOPE

The objective of the revised SSG-16 Safety Guide will be to provide updated guidance on establishing the safety infrastructure for a nuclear power programme in line with the revision of the IAEA safety requirements, including the implications of the Fukushima Daiichi NPP accident. The focus will be on the phased application of the revised safety requirements during the 3 initial phases of a nuclear power programme.

The revision will also include feedback from the utilization of the Safety Guide since its publication.

There is no intention to change the structure, the approach and the level of detail contained in SSG-16.

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

This Specific Safety Guide falls within the thematic area of nuclear safety and will interface with the following IAEA Safety Standards and other publications (this is not, and cannot be, regarded as an exclusive or exhaustive list):

- SF-1 Fundamental Safety Principles (2006).
- GSR Part 1 Governmental, Legal and Regulatory Framework for Safety (2010) (Rev.1 to be published before finalization of this safety guide revision)
- GSR Part 2 Leadership and Management for Safety (to be published before finalization of this safety guide revision)
- GSR Part 3 Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards (Interim Edition, 2014)
- GSR Part 4 Safety Assessment for Facilities and Activities (2009) (Rev.1 to be published before finalization of this safety guide revision)
- GSR Part 5 Predisposal Management of Radioactive Waste (2009)
- GSR Part 6 Decommissioning of Facilities (2014)
- GSR Part 7 Preparedness and Response for a Nuclear or Radiological Emergency (to be published before finalization of this safety guide revision)
- SSR-2/1 Safety of Nuclear Power Plants: Design, (2012) (Rev.1 to be published before finalization of this safety guide revision)
- SSR-2/2 Safety of Nuclear Power Plants: Commissioning and Operation (2011) (Rev.1 to be published before finalization of this safety guide revision)
- SSR-5 Disposal of Radioactive Waste
- SSR-6 Regulations on the Safe Transport of Radioactive Material – 2012 Edition Specific Safety Requirements

- NS-R-3 Site Evaluation for Nuclear Installations Safety Requirements (2003) (Rev.1 to be published before finalization of this safety guide revision)
- NS-R-5 (Rev. 1) Safety of Nuclear Fuel Cycle Facilities
- INSAG-22 Nuclear Safety Infrastructure for a National Nuclear Power Programme
- NSS -19 Establishing the Nuclear Security Infrastructure for a National Nuclear Power Programme
- NG-G-3.1 IAEA Nuclear Energy Series, Milestones in the Development of a National Infrastructure for Nuclear Power (2007) (Rev. 2 to be published before finalization of this safety guide revision)

As applicable, it will be necessary to coordinate with the development and revision of other relevant IAEA Safety Standards.

The revision will take into consideration the changes being introduced in IAEA Nuclear Energy Series No. NG-G-3.1 (Rev. 2), Milestones in the Development of a National Infrastructure for Nuclear Power. Staff of the Nuclear Safety and Security Department are involved in the revision of NS G 3.1 (already initiated by the Department of Nuclear Energy) to ensure consistency with the nuclear safety standards and that safety remains the top priority of a nuclear power programme.

6. OVERVIEW

The basic structure of SSG-16 which describes the establishment of the safety infrastructure in terms of 20 elements associated to general and specific safety requirements will remain unchanged. The 200 actions proposed in SSG-16 for the three initial phases of a nuclear power programme will be generally maintained.

The revision of SSG-16 will focus on reflecting the implications of the revision of the safety requirements in the Actions to establish the safety infrastructure for a nuclear power programme. This will be done systematically throughout all sections of SSG-16, taking into consideration that the existing structure of SSG-16 identifies the safety requirements relevant to each action and phase.

For each one of the three initial phases of a nuclear power programme SSG-16 identifies Actions related to the implementation of generic and specific safety requirements relevant to 20 elements (e.g. national policy and strategy for safety; global nuclear safety regime; legal framework; regulatory framework). As the safety requirements are revised new text will be developed to reflect the changes in the implementation of the Actions.

Moreover, at the 6th Review Meeting of the Contracting Parties of the Convention on Nuclear Safety (March-April 2014) the implications of the accident at the Fukushima Daiichi NPP were discussed. Insights have been consolidated under 5 main areas namely: scope of safety assessments; design improvements; emergency preparedness and response; regulatory framework and international considerations. These insights will be analyzed in line with the changes in the safety requirements and also reflected as additional guidance for the implementation of the Actions contained in SSG 16.

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

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| STEP 1: Preparing a DPP | DONE |
| STEP 2: Approval of DPP by the Coordination Committee | March 2014 |
| STEP 3: Approval of DPP by the relevant review Committees | June/July 2014 |
| STEP 4: Approval of DPP by the CSS | November 2014 |
| STEP 5: Preparing the draft | 2014 |
| STEP 6: Approval of draft by the Coordination Committee | IQ 2015 |
| STEP 7: Approval by the relevant review Committees for submission to Member States for comments | IIQ 2015 |
| STEP 8: Soliciting comments by Member States | IIIQ 2015 |
| STEP 9: Addressing comments by Member States | IVQ 2015 |
| STEP 10: Approval of the revised draft by the Coordination Committee | IQ 2016 |
| STEP 11: Approval by the relevant review Committees for submission to the CSS | IIQ 2016 |
| STEP 12: Endorsement by the CSS | IVQ 2016 |
| STEP 13: Establishment by the Publications Committee | IVQ 2016 |
| STEP 14: Target publication date | Mid-2017 |

8. RESOURCES

Estimated resources required: 1 P-staff (0.5 person-year); 3 CS meetings (estimated 5 external experts per meeting); Secretariat and Member States.

ANNEX 1 (for information)

Feedback Report of the Consultants Meeting:

Background

From 21-24 October 2013, the secretariat organized in Vienna a consultants' meeting to review the safety guide SSG 16 "Establishing the Safety Infrastructure for a Nuclear Power Programme" and to determine the need and scope for its revision. Five consultants from Brazil, France, Pakistan, UAE, USA and one IAEA staff participated in the meeting.

Approach for Review

Examination of changes proposed in DS 462 with respect to their potential impact on SSG-16 scope and contents.

During this CS, the experts reviewed the changes to the requirements proposed in DS 462 and the relevant elements (sections) of SSG-16 where these requirements are referred. Next, the experts assessed the impact that the proposed changes could have on the relevant elements of SSG-16. This work was facilitated by work, previously prepared by the secretariat, associating the SSG-16 elements and phases with the requirements proposed for change in DS 462.

The experts also examined the conclusions of two reports prepared in the frame of the IAEA Action Plan on Nuclear Safety. The two reports are the results from International Experts' Meetings (IEM) on Strengthening Nuclear Regulatory Effectiveness in the Light of the Accident at the Fukushima Daiichi Nuclear Power Plant, and Preparedness and Response for a Nuclear or Radiological Emergency in the Light of the Accident at the Fukushima Daiichi Nuclear Power Plant. The intention of examining the conclusions of these two reports was to identify findings from the analysis of the Fukushima Daiichi NPP accident related to the proposed changes in the safety requirements, which would impact on establishing the safety infrastructure for nuclear power.

Conclusions

- Most of the changes in the requirements proposed in DS462 do not affect the structure and scope of SSG-16 and, in principle, no additional Actions will be needed. However, the experts noted that some elements (sections) of SSG-16 will require clarification or special emphasis to reflect the intent of the proposed changes in the requirements. In some cases, additional supporting text was proposed. The experts also noted that DS462 was still under review by Member States, and that conclusions would need to be confirmed following approval of DS462.
- Other Safety Requirements referenced in SSG-16 are being revised (e.g. GSR Part 2, GSR Part 7). The revision of these Safety Requirements should also be examined for possible impact on SSG-16.
- The examination of the conclusions of the two IEM reports also did not lead to the need for new Actions. However, to reflect some of the lessons learned from Fukushima, inclusion of additional supporting text related to the SSG 16 actions will be very beneficial to guide countries establishing the safety infrastructure for nuclear power.

- The remaining IEM reports should also be examined to identify findings relevant to the revision of SSG-16.
- Based on the above the experts concluded that a revision of SSG 16, in line with the changes in the safety requirements, is justified and timely and that it would provide new and valuable guidance to countries considering and preparing to embark on nuclear power in the aftermath of Fukushima Daiichi NPP accident.
- The experts also suggested that the revision of SSG 16 can be accomplished by amendment.