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Commission on Safety Standards
Report of the Sixth Term
2016-2019

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Chairperson

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1. BACKGROUND

The status of the IAEA safety standards derives from the IAEA's Statute, which authorizes the IAEA to establish or adopt, in consultation and, where appropriate, in collaboration with the competent organs of the United Nations and with the specialized agencies concerned, standards of safety for protection of health and minimization of danger to life and property, and to provide for their application.

The findings of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and the recommendations of international expert bodies, notably the International Commission on Radiological Protection (ICRP), are taken into account in developing the IAEA safety standards.

With a view to ensuring the protection of people and the environment from harmful effects of ionizing radiation, the IAEA safety standards establish fundamental safety principles, requirements and measures to control the radiation exposure of people and the release of radioactive material to the environment, to restrict the likelihood of events that might lead to a loss of control over a nuclear reactor core, nuclear chain reaction, radioactive source or any other source of radiation, and to mitigate the consequences of such events if they were to occur. The standards apply to facilities and activities that give rise to radiation risks, including nuclear installations, the use of radiation and radioactive sources, the transport of radioactive material and the management of radioactive waste.

The IAEA safety standards reflect an international consensus on what constitutes a high level of safety for protecting people and the environment from harmful effects of ionizing radiation. Member States, the United Nations, its specialized agencies concerned and other intergovernmental and non-governmental organizations are involved in various forms throughout the drafting, review and approval of the IAEA safety standards.

In August 1995, the Agency introduced a new approach for the preparation and review of its safety standards. The new approach created a Commission on Safety Standards (CSS) and four specialist Committees (for nuclear safety, radiation safety, transport safety and radioactive waste safety). In 2015 an additional Safety Standards Committee, EPReSC, was established to cover more precisely the emergency preparedness and response area.

For the nuclear security area, in 2012 the Director General established a dedicated Review Committee, the Nuclear Security Guidance Committee, as a standing Committee to make recommendations on the development and review of IAEA Nuclear Security Series publications.

The CSS has a special overview role with regard to the Agency's safety standards and provides advice to the Director General on the overall programme on regulatory aspects of safety. The CSS is also informed about draft IAEA Nuclear Security Series publications for which there is an interface with safety. The terms of reference for the CSS are provided in Appendix 1.

The Director General appoints the members of the Commission for a four-year term. The members of the Commission during its sixth term are listed in Appendix 2.

According to the document on Strategies and Process for the Establishment of IAEA Safety Standards (SPESS A), the Chairperson, in consultation with the Scientific Secretary, will submit (1) a report of each CSS meeting, (2) a mid-term report of the progress of the CSS on its programme of work and (3) an end of term report on the CSS's achievements over its four year term and its recommendations for the future.

At the end of the fifth term of the CSS in December 2015, the Chairperson of the Commission, Ms Dana Drábová, provided a report to the Director General indicating the progress achieved in the four years from 2012–2015. Her report highlighted major achievements during the fifth term, including:

(a) Completion of the General Safety Requirements publications (including the review and, where appropriate, revision of these Requirements publications following the Fukushima Daiichi accident);

(b) The approval of a modular approach to the review, revision and publication process for the safety standards; this modular approach first went into operation in 2015 and involves revising a 'batch' of several topically interrelated standards at once;

(c) The progress towards addressing the interfaces between safety and nuclear security in the safety standards and nuclear security guidance, as elaborated in the November 2011 final report of the Joint Task Force of the Advisory Group on Nuclear Security (AdSec) and the CSS;

(d) The revision of SPESS A in November 2015 to incorporate a policy paper on quantitative versus qualitative standards discussed in April 2015.

During its sixth term, the CSS has built upon the work of the first five terms, and has delivered a number of achievements, as described in this report.

This report constitutes the end of term report for the sixth term of the CSS and provides a review of the work of the CSS during the four-year term covering the period January 2016 to December 2019. In the sixth term the Commission held eight meetings. The purpose of this report is:

- To record the work and main achievements of the Commission, particularly on strategy and policy issues;
- To report on progress on the review of the safety standards under development and to identify areas for particular attention; and
- To record the Commission's recommendations to the Director General and the Safety Standards Committees for the future direction of the work on Safety Standards.

2. INTERACTION WITH THE SAFETY STANDARDS COMMITTEES

As mentioned above, the Commission is part of a review and approval structure for safety standards that involves the five established Safety Standards Committees, EPReSC, NUSSC, RASSC, TRANSSC and WASSC. The input from these Committees is reviewed by the CSS. In addition, the Safety Standards Committees provide regular updates to the Commission at each meeting. Furthermore, initiatives taken by the CSS involve activities performed with the Safety Standards Committees. The main activities performed during the sixth CSS term are summarized for each Committee in Appendices 3 to 7.

The CSS also receive regular information on the activities of the Nuclear Security Guidance Committee.

3. MAIN ACHIEVEMENTS DURING THE SIXTH TERM

The Commission met twice every year during its sixth term, from 2016 to 2019 (39th to 46th meetings). At the last meeting of this term in December 2019, the CSS reviewed the progress made at these meetings and noted the following achievements.

(a) Completion of the long term structure of the IAEA Safety Standards

The Commission welcomed the completion of the long-term structure of the Safety Requirements, in accordance with the roadmap approved during its fourth term. A summary of the situation regarding the Safety Requirements publications is given below:

All General Safety Requirements have now been published. The seven General Safety Requirements publications, with their dates of issue, are as follows:

- GSR Part 1 (Rev. 1): Governmental, Legal and Regulatory Framework for Safety (February 2016)

- GSR Part 2: Leadership and Management for Safety (June 2016)
- GSR Part 3: Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards (July 2014)
- GSR Part 4 (Rev. 1): Safety Assessment for Facilities and Activities (February 2016)
- GSR Part 5: Predisposal Management of Radioactive Waste (May 2009)
- GSR Part 6: Decommissioning of Facilities (July 2014)
- GSR Part 7: Preparedness and Response for a Nuclear or Radiological Emergency (November 2015)

All Specific Safety Requirements have also now been published. The seven Specific Safety Requirements publications, with their dates of issue, are as follows:

- SSR-1: Site Evaluation for Nuclear Installations (April 2019)
- SSR-2/1 (Rev. 1): Safety of Nuclear Power Plants: Design (February 2016)
- SSR-2/2 (Rev. 1): Safety of Nuclear Power Plants: Commissioning and Operation (February 2016)
- SSR-3: Safety of Research Reactors (September 2016)
- SSR-4: Safety of Nuclear Fuel Cycle Facilities (October 2017)
- SSR-5: Disposal of Radioactive Waste (April 2011)
- SSR-6 (Rev. 1): Regulations for the Safe Transport of Radioactive Material 2018 Edition (June 2018)

(b) Streamlining the review/revision of the safety standards and stabilization of the safety standards

At its last meeting of the term in December 2019, the CSS considered possible ways of streamlining the revision of the Safety Requirements publications in the future, using the experience gained in the revision of a batch of five Safety Requirements publications to incorporate the findings from the Fukushima Daiichi accident and in the revision of several Safety Guides by batch (see below). The CSS noted that some of the Safety Requirements publications are up to a decade old and so their review might be warranted. Noting that such reviews were now being considered, the CSS supported the Secretariat's suggestion that the reviews of Safety Requirements publications should be undertaken as a single 'batch' of related publications and that any consequent revisions should be made by amendment. In particular a possible option, to be further investigated with the Safety Standards Committees during the seventh term, is that in the future GSR Part 3 and GSR Part 7 could be reviewed, and if necessary revised, together. Similarly, GSR Part 5, GSR Part 6 and SSR-5 could be reviewed, and if necessary revised, together. For the other Specific Safety Requirements publications, one possible option for the future could be to also review and, if necessary, revise these together in batches, or else within a short period of time.

With regard to the long-term structure of the Safety Guides, the CSS noted that most DPPs presented for approval during the sixth term were for revisions of existing safety standards. The CSS recognized that this is a clear reflection of a process of stabilization of the overall collection of safety standards and indicates good progress towards the establishment of the long-term structure of the standards, as set out in the 2008 Roadmap.

(c) Endorsement of standards and approval of DPPs

The CSS endorsed 39 new or revised draft safety standards (5 Safety Requirements publications and 34 Safety Guides). The Safety Requirements publications endorsed by the CSS during its sixth term were:

- General Safety Requirements GSR Part 2 on Leadership and Management for Safety;
- Specific Safety Requirements SSR-3 on Safety of Research Reactors;
- Specific Safety Requirements SSR-4 on Safety of Nuclear Fuel Cycle Facilities;
- Specific Safety Requirements SSR-6 (Rev. 1) on Regulations for the Safe Transport of Radioactive Material, 2018 Edition;
- Specific Safety Requirements SSR-1 on Site Evaluation for Nuclear Installations.

The Safety Guides endorsed by the CSS during its sixth term were:

- Radiation Protection and Safety in Medical Uses of Ionizing Radiation (DS399);
- Prospective Radiological Environmental Impact Assessment for Facilities and Activities (DS427);
- Radiation Protection of the Public and Protection of the Environment (DS432);
- Regulatory Control of Radioactive Discharges to the Environment (DS442);
- Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities (DS452);
- Predisposal Management of Waste from the Use of Radioactive Materials in Medicine, Industry, Research, Agriculture and Education (DS454);
- Establishing a National Radiation Safety Infrastructure (DS455);
- Arrangements for the Termination of a Nuclear or Radiological Emergency (DS474);
- Ageing Management and Development of a Programme for Long Term Operation of Nuclear Power Plants (DS485);
- Organization, Management and Staffing of the Regulatory Body for Safety (DS472);
- Functions and Processes of the Regulatory Body for Safety (DS473);
- Operating Experience Feedback for Nuclear Installations (DS479);
- Decommissioning of Medical, Industrial and Research Facilities (DS403);
- Radiation Safety of X-ray Generators and other Radiation Sources Used for Inspection Purposes and for Non-Medical Human Imaging (DS471);
- Design of the Reactor Coolant System and Associated Systems in Nuclear Power Plants (DS481);
- Design of the Reactor Containment and Associated Systems for Nuclear Power Plants (DS482);
- Accident Management Programmes for Nuclear Power Plants (DS483);
- Establishing the Safety Infrastructure for a Nuclear Power Programme (DS486);
- Design of the Reactor Core for Nuclear Power Plants (DS488);
- Deterministic Safety Analysis for Nuclear Power Plants (DS491);
- Human Factors Engineering in the Design of Nuclear Power Plants (DS492);
- Radiation Safety in Well Logging (DS419);
- Radiation Safety in the Use of Nuclear Gauges (DS420);
- Radiation Safety of Accelerator Based Radioisotope Production Facilities (DS434);
- Design of Auxiliary Systems and Supporting Systems for Nuclear Power Plants (DS440);
- Format and Content of the Safety Analysis Report for Nuclear Power Plants (DS449);

- Management of Residues Containing Naturally Occurring Radioactive Material from Uranium Production and other Activities (DS459);
- Arrangements for Public Communication in Preparedness and Response for a Nuclear or Radiological Emergency (DS475);
- Design of Fuel Handling and Storage Systems for Nuclear Power Plants (DS487);
- Storage of Spent Nuclear Fuel (DS489);
- Preparedness and Response for a Nuclear or Radiological Emergency Involving the Transport of Radioactive Material (DS469);
- Protection against Internal Hazards in the Design of Nuclear Power Plants (DS494);
- Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material (2018 Edition) (DS496);
- Schedules of Provisions of the IAEA Regulations for the Safe Transport of Radioactive Material (2018 Edition) (DS506).

The CSS also approved 29 DPPs (document preparation profiles) for 47 safety standards (1 Safety Requirements publication and 46 Safety Guides).

The vast majority of DPPs were for revisions of existing standards. In one case, the proposal consisted of the combination of two existing Safety Guides (NS-G-1.7 and NS-G-1.11). In another case, two new Safety Guides were proposed to revise one existing Safety Guide (RS-G-1.7). The DPPs approved also included the DPP for DS497, which is the revision of a single batch of seven closely interrelated Safety Guides supporting the Safety Requirements publication SSR-2/2 (Rev. 1) including, among other aspects, consideration of findings from the Fukushima Daiichi accident. A similar approach (revision in several topically interrelated batches of Safety Guides) was used for the revision of the Safety Guides on the Safety of Research Reactors (DS509 to DS511) and for the revision of the Safety Guides on the Safety of Nuclear Fuel Cycle Facilities (DS516 to DS518). The CSS continues to support this modular, batch-wise approach for the revision of Safety Guides in the future, with a view to ensuring more stability and better consistency.

Out of the 29 DPPs approved, 3 DPPs were for the establishment of new Safety Guides on:

- Assessment of the Application of General Requirements for Design of Nuclear Power Plants (DS508);
- Qualification of Items Important to Safety for Nuclear Installations (DS514);
- Protection of Workers against Exposure due to Radon (DS519).

The Commission had therefore fully discharged its duties in this respect, by efficiently reviewing, discussing and approving or endorsing all the drafts and DPPs submitted by the Secretariat.

(d) The review of the safety standards in light of lessons from the Fukushima Daiichi accident

Review/revision of the Safety Requirements publications in light of lessons from the Fukushima Daiichi accident

All of the Safety Requirements publications have now been reviewed and, where necessary, revised in accordance with the IAEA Action Plan on Nuclear Safety to incorporate findings from the Fukushima Daiichi accident. These findings were incorporated into the publications either through a revision by amendment or during the development of a complete revision.

Five Safety Requirements publications were revised by amendment and were all published in 2016, as follows:

- Governmental, Legal and Regulatory Framework for Safety, IAEA Safety Standards Series No. GSR Part 1 (Rev. 1);
- Site Evaluation for Nuclear Installations, IAEA Safety Standards Series No. NS-R-3 (Rev. 1) (thereafter subject to a complete revision and issued in 2019 as SSR-1);
- Safety of Nuclear Power Plants: Design, IAEA Safety Standards Series No. SSR-2/1 (Rev. 1);
- Safety of Nuclear Power Plants: Commissioning and Operation, IAEA Safety Standards Series No. SSR-2/2 (Rev. 1);
- Safety Assessment for Facilities and Activities, IAEA Safety Standards Series No. GSR Part 4 (Rev. 1).

Complete revisions of GS-R-2 and GS-R-3 were published, in 2015 and 2016 respectively, as follows:

- Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GSR Part 7;
- Leadership and Management for Safety, IAEA Safety Standards Series No. GSR Part 2.

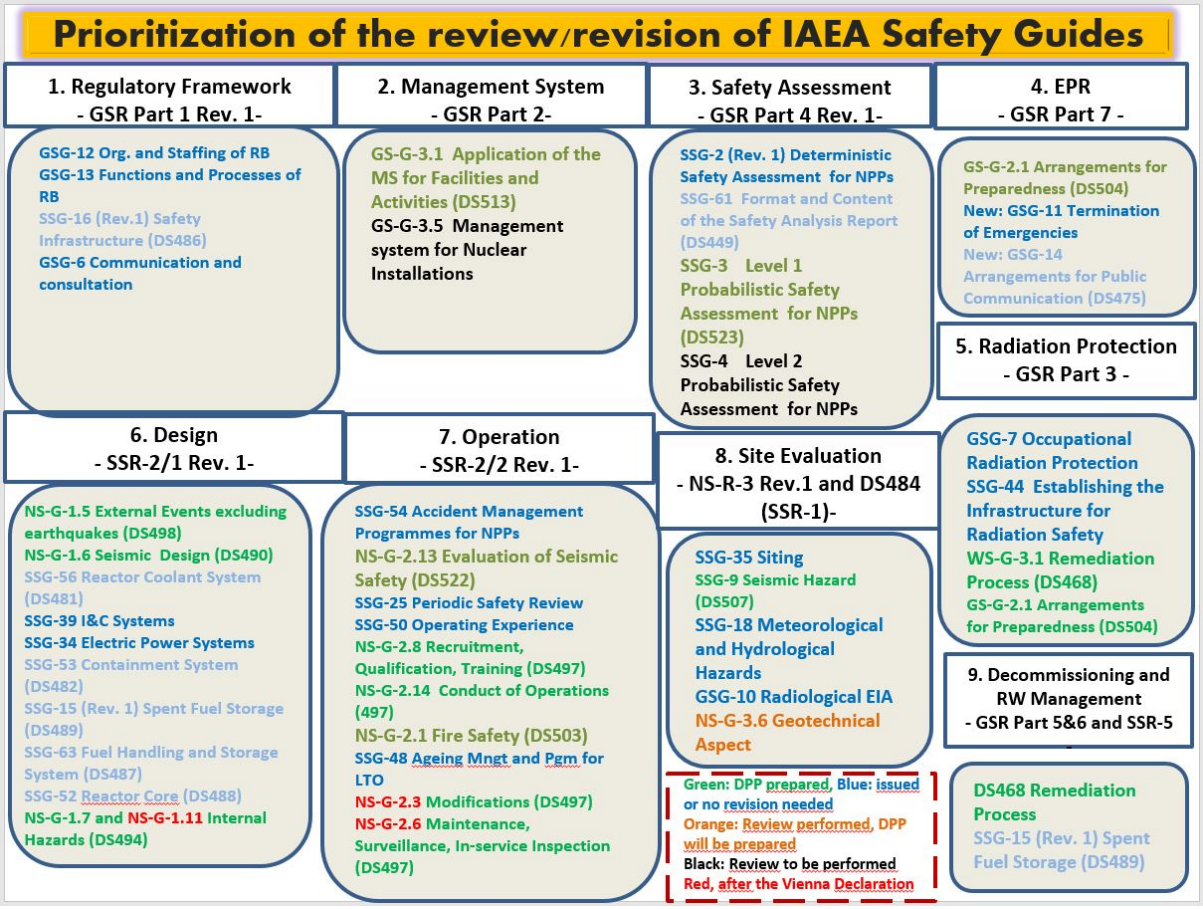
Complete revisions of NS-R-4 and NS-R-5 (Rev. 1) were also issued, in 2016 and 2017 respectively, as follows:

- Safety of Research Reactors, IAEA Safety Standards Series No. SSR-3;
- Safety of Nuclear Fuel Cycle Facilities, IAEA Safety Standards Series No. SSR-4.

Review/Revision of the Safety Guides in light of lessons from the Fukushima Daiichi accident

During its fifth and sixth terms, a list of priorities for the review and revision of the Safety Guides was established with the support from the Safety Standards Committees. This resulted in the figure here below where the current status is indicated:

- For 21 Safety Guides highlighted in blue, the revision is now complete and they have either already been issued or are close to being published (GSG-6, GSG-7, GSG-10, GSG-11, GSG-12, GSG-13, GSG-14, SSG-2 (Rev. 1), SSG-15 (Rev. 1), SSG-16 (Rev. 1), SSG-34, SSG-39, SSG-44, SSG-48, SSG-50, SSG-52, SSG-53, SSG-54, SSG-56, SSG-61, SSG-63);
- Fourteen draft Safety Guides highlighted in green are currently being developed — most of them at an advanced development stage (DS468 at step 11, DS490 at step 11, DS494 at step 12, DS497b at step 10, DS497e at step 10, DS497f at step 10, DS497g at step 10, DS498 at step 11, DS507 at step 11, DS503 at step 5, DS504 at step 5, DS513 at step 4, DS522 at step 4 and DS523 at step 4);
- One revision is at the stage of preparation of the DPP (revision of NS-G-3.6);
- Three Safety Guides were confirmed as not needing revision at this time (SSG-18, SSG-25 and SSG-35);



(e) Review of the Safety Fundamentals publication SF-1

In April 2018, the CSS requested all Safety Standards Committees to undertake a review of the Safety Fundamentals publication SF-1. This review was performed by all Committees during the year 2018 and was finalized at the beginning of 2019. For most of the Committees, this involved the preparation of a questionnaire, the meeting of dedicated working groups or exchanges via electronic working groups. The results were discussed by all Chairpersons and an executive summary was prepared at a Chairs' meeting before the 45th CSS meeting in April 2019. This was presented at the 45th CSS meeting.

All the Committees identified several parts of SF-1 that could be improved, including parts that could be strengthened to improve consistency in the use of terminology or consistency with ICRP recommendations as well as with some of the General Safety Requirements. The possibility of introducing additional, new principles was also discussed.

The Committees also commented that, overall, SF-1 remains valid, is widely used and is supported by the Member States and therefore considered that its stability is important.

All Committees concluded that there was no justification for an immediate revision of SF-1, but recommended that, at some time in the future, a new review should be initiated with a dedicated framework to be established for the formal involvement of the current cosponsors and possible additional cosponsors.

The results of the 2018 review would then be an initial input for such a future review and as such it will be kept available in a dedicated folder on the CSS web page. This is also being documented as feedback

on SF-1 using the NSS-OUI platform (see (f) below) and the CSS further recommended all Committee members to continue documenting any new feedback using this NSS-OUI feature.

(f) The harmonization of safety standards and nuclear security guidance

During the sixth term of the CSS, ten draft Nuclear Security Series publications and one DPP for a Nuclear Security Series publication were provided for information to the CSS to review interface aspects and verify that the appropriate cross-references to safety standards were indicated, as follows[1]:

- Draft Implementing Guide NST020 on Sustaining a Nuclear Security Regime;
- Draft Implementing Guide NST009 on Building Capacity for Nuclear Security;
- Draft Implementing Guide NST041 on Preventive and Protective Measures against Insider Threats;
- Draft Implementing Guide NST048 on Security of Radioactive Material in Use and in Storage and of Associated Facilities;
- Draft Implementing Guide NST011 on Preventive Measures for Nuclear and Other Radioactive Material out of Regulatory Control;
- Draft Implementing Guide NST044 on Security of Radioactive Material in Transport;
- Draft Implementing Guide NST004 on Developing a National Framework for Managing the Response to Nuclear Security Events;
- Draft Implementing Guide NST045 on Computer Security for Nuclear Security;
- Draft Implementing Guide NST051 on Security during the Lifetime of a Nuclear Facility;
- Draft Implementing Guide NST058 on National Nuclear Security Threat Assessment, Design Basis Threats and Representative Threat Statements;
- Draft DPP for an Implementing Guide NST058 on Development, Use and Maintenance of Threat Assessment and Design Basis Threat.

The coordinated review of draft safety standards and draft nuclear security guidance publications, and the identification and development of interface documents, suggest that there is scope for further harmonization, and possibly integration, of some safety and nuclear security publications in the future. At the 46th CSS meeting, the Secretariat presented a draft publications plan for complementary reports aiming to support Member States by providing practical guidance on managing the interfaces between safety and nuclear security. The plan includes an existing INSAG report (INSAG-24), a joint INSAG-AdSeC report being prepared, an existing TECDOC, as well as a new collection of Technical Reports (all with a number starting with Technical Reports Series No. 1000). The same draft publication plan was also submitted for consideration by the Nuclear Security Guidance Committee.

The CSS supports the draft 'Publication Plan' on safety–security interfaces, including a joint safety–security guide and the tentative list of publications for the 'Technical Report Series 1000'. The Commission noted the progress achieved so far and encouraged further work in the area. The Secretariat will provide the CSS with updates on the implementation of this plan.

(g) Future review, revision and publication process

The Nuclear Safety and Security – Online User Interface (NSS-OUI platform), which was developed under the CSS's auspices during its fourth and fifth terms and which received the CSS's full support, is a knowledge and content management system that establishes the framework for the future review, revision and publication process. It enables easy access and navigation online across the entire set of

[1] The titles are those as were submitted to the CSS.

safety standards and nuclear security guidance and provides an easily accessible means for authorized users to provide feedback on the safety standards and nuclear security guidance, so that their future review and revision can be informed by the systematic collection and analysis of feedback, thereby ensuring that any revisions are justified. NSS-OUI also supports maintaining technical consistency between publications by managing them as a series, and it enhances semantic consistency through the systematic use of harmonized terminology. Together, these features contribute to enhancing the overall stability of the safety standards and nuclear security guidance.

Some significant developments of the framework for this process have been achieved during the sixth term of the Commission, as follows:

- All the IAEA Safety Standards Series and IAEA Nuclear Security Series publications are now available on NSS-OUI.
- The metadata search and full text search capabilities for all safety standards and nuclear security guidance publications are now operational. The advanced topical search function is also operational, with further refinements implemented to enable users to "search the search criteria". The relationship search functionality has also been improved to enhance its user friendliness and to include the possibility to filter search results according to specific topical areas.
- The central feedback mechanism is now fully operational, and members of the CSS and the Committees have been provided with the appropriate access rights to the system to enable them to use the feedback mechanism. The mechanism to start the process for revision of a publication is also now in place.
- The process of inserting relationships between Safety Requirements, Safety Guides, Safety Reports and TECDOCs less than 5 years old has been completed. This will be expanded to include older, relevant publications.
- The IAEA Safety Glossary has been integrated into the NSS-OUI platform (see also below). The General Safety Requirements publications have been 'tagged' with embedded links to Glossary definitions. Terms that have been tagged are underlined with a blue dotted line, and the definition is displayed in a pop-up window. The Secretariat is progressing with the tagging of the Specific Safety Requirements and newly published Safety Guides.
- SPESS E is updated periodically to reflect the developments of NSS-OUI. The most recent version was issued in March 2019.

(h) Safety Glossary

The 2018 Edition of the IAEA Safety Glossary was published in 2019 and is available on the IAEA website at https://www.iaea.org/resources/safety-standards/safety-glossary. The 2018 Edition takes into account new terminology and usage in safety standards issued between 2007 and 2018.

The IT architecture for the integration of the Safety Glossary into the NSS-OUI platform was developed in 2017, so that the electronic versions of the safety standards would include user-friendly access to the definitions of defined terms. The electronic version of the Safety Glossary is available at https://kos.iaea.org/iaea-safety-glossary.html and it contains cross links between terms, sub-terms and related terms, thus facilitating its use.

Funding has been received for the translation of the Safety Glossary into French and Spanish. The Secretariat is continuing its efforts to obtain additional funding for its translation into the other three official languages.

(i) Publications procedure

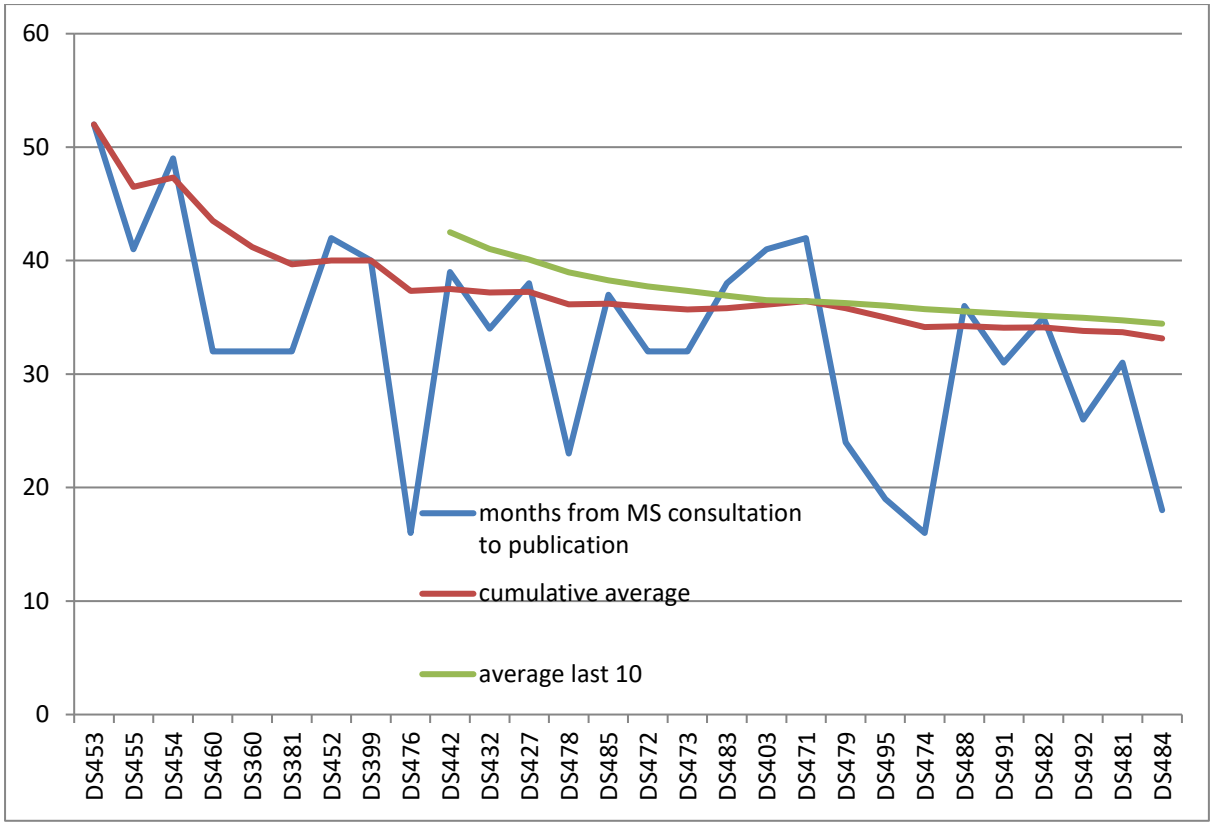
There continue to be challenges with regard to the time it takes for safety standards to be issued following their endorsement by the CSS. During the sixth CSS term, several Secretariat initiatives were undertaken aiming to alleviate this issue:

- All draft safety standards are now submitted to the Publications Committee for review and for editing in the Agency's Publishing Section in parallel with their review by the CSS. In addition to helping to shorten the time taken to issue safety standards, this change in the sequence of activities also ensures that no changes to the text will be made after endorsement by the CSS. The change in the process is reflected in the revision of the SPESS B manual issued in March 2018.
- For a one-year period, from September 2017 to September 2018, an additional staff member was made available to support the editing in the Agency's Publishing Section.

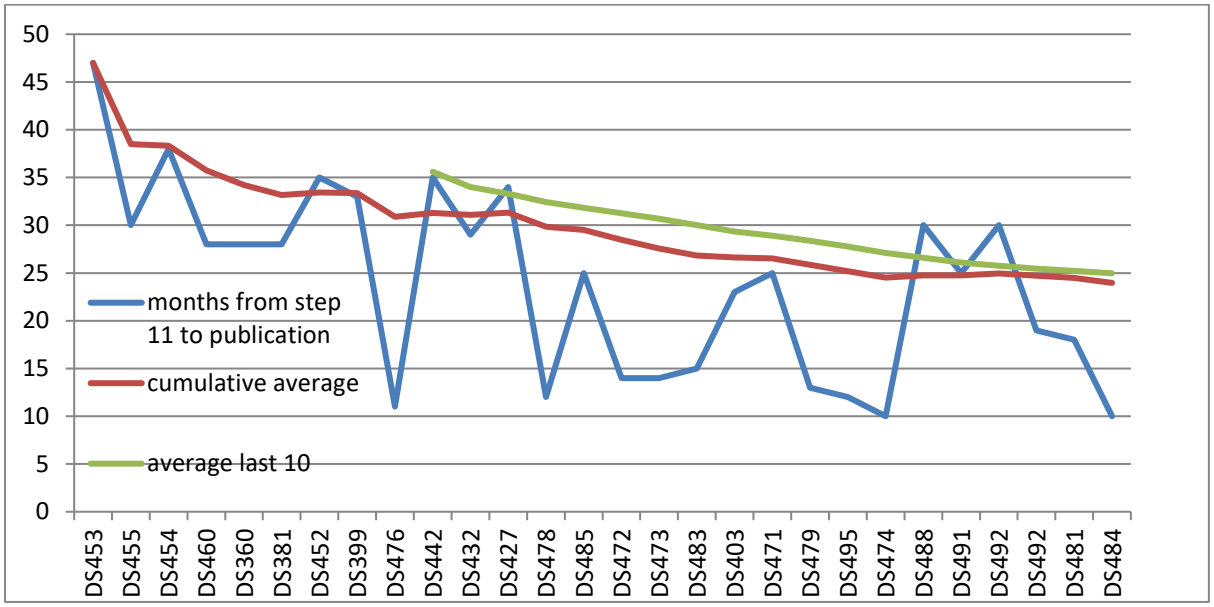
These initiatives resulted in a significant decrease in the overall timing from Member States consultation to final publication, as well as the timing from approval by the Safety Standards Committees and the final publication. In the figures here below, this timing is provided for a number of safety standards, in the order they were submitted to Member States for comments. The third of the figures here below indicate however that, while a significant decrease was observed initially, the evolution has now reached an asymptotic limit, which demonstrates the need for further efforts in addressing the publication issues.

In addition, it is to be noted that since the end of 2018, all drafts endorsed by the CSS (except DS483) were not edited in MTCD before submission to the CSS. As a result, all edited versions were resubmitted through a silence approval process of two weeks to confirm the endorsement by the CSS on the edited versions. In the meantime, endorsed drafts are available in a dedicated CSS web folder.

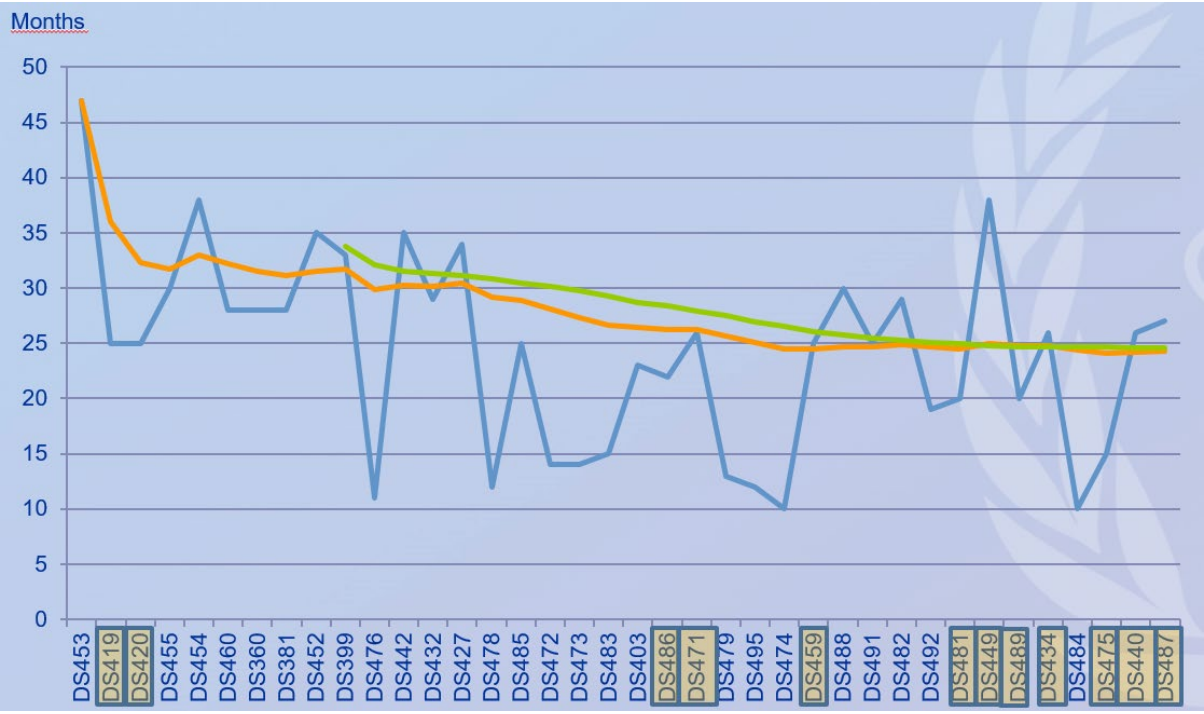
The second of the figures here below indicates however that, if the queue in the publishing process can be addressed and resolved, it should be feasible to achieve a 10 month target for the timing between the step 11 approval and the final issuance of the publication, compared to the 24 months current average. The CSS also noted that an 8 months target could be an ultimate objective.



Timing in number of months from the end of Member States consultation to final publication



Timing in number of months from final approval by the Committees to final publication



Extrapolation assuming a 20 % increase of the available resources on the timing in number of months from final approval by the Committees to final publication.

(j) Use of the safety standards in Member States

As a regular agenda item, CSS members have reported on the use of the IAEA safety standards in individual Member States. Presentations have been provided by the vast majority of the CSS members on their use of IAEA safety standards.

Many CSS members have reported that the structure and content of their national regulations mirror those of the IAEA safety standards. They are used both directly and indirectly, in connection with Agency safety review missions, as general non-binding guidance for operators, as a reference for the regulatory body when assessing licensing applications and as a basis for the development and review of national regulations.

(k) Interests for the sixth term

At its 40th meeting (November 2016), the CSS finalized a list of eight topics to be addressed as interests for its sixth term.

At the 46th meeting the Secretariat indicated the progress achieved so far on these eight topics. This progress report is provided in Appendix 8.

(l) Other policy discussions

2012 UNSCEAR report "Attributing Health Effects to Ionizing Radiation Exposure and Inferring Risks"

In 2015, the UNSCEAR 2012 Report to the General Assembly and its Annexes on attribution of health effects and inference of risk (A/67/46) was published. The UNSCEAR 2012 report raised questions about understanding among experts and communication with the public regarding issues such as radiation exposure, health effects and future risks, and set out in clear language the concepts of retrospective attribution of radiation health effects to past radiation exposures and prospective inference of health risks from radiation exposures.

During its sixth term, the CSS continued the discussion that was initiated at the end of its fifth term on the implications of the UNSCEAR report. A CSS policy paper was presented and discussed at the 40th CSS meeting. There was a general consensus that the UNSCEAR report does have implications for risk communication, which is an important area in which improvements can be made. It was agreed that a CSS Working Group would be established including: the CSS members from Argentina, Australia, Finland and the United States of America; and the Chairs of EPReSC, RASSC and WASSC. It was also agreed that the Working Group would also involve the UNSCEAR and ICRP Secretariats, together with staff from the IAEA Secretariat.

A first Consultancy Meeting was held in October 2017, followed by a second Consultancy Meeting held in February 2018. After further discussion at its 43rd meeting, the CSS recommended that a Safety Report be prepared by experts from each of the five SSCs and with the involvement of NSGC and the Secretaries of ICRP and UNSCEAR to address the recommendations from the consultants' meeting report and specifically to provide practical guidance, including case studies, on how to apply the concepts of:

- Retrospective attribution of radiation health effects;
- Prospective inference of health risks from radiation exposures;
- Prediction of notional health effects for comparative purposes (e.g. the use of collective dose).

A third Consultancy Meeting was held in March 2019, involving representatives of UNSCEAR, ICRP, the Review Committees, the CSS and the Secretariat. At the consultants' meeting an annotated DPP was produced, including the objective and scope of the Safety Report, and a draft table of contents. A more concise draft DPP was then prepared by the Secretariat in May 2019 and was approved by the Coordination Committee in accordance with the Agency's normal internal approval procedures. Volunteers from the Review Committees and the CSS started drafting the text in September 2019. The inputs will be assembled by the Secretariat to create a first draft. It is likely that a Consultancy Meeting will need to be convened in 2020 to refine the draft. The target publication date is end of 2020, depending on progress in the drafting and review. Progress reports will be provided to CSS and the Review Committees.

INSAG report on Institutional Strength in Depth (INSAG-27)

The Commission discussed the INSAG-27 report on institutional strength in depth at its 40th meeting. A robust nuclear safety system has to be built on the principles of 'institutional strength in depth', which has three main, independent layers: industry, regulators and stakeholders, each with multiple sub-layers. The foundation is strong leadership and culture for nuclear safety and the interfaces between the layers

are crucial. The Commission requested the Secretariat to consider how the safety standards reflect the concept of institutional strength in depth, as set out in the INSAG-27 report.

At the 41st CSS meeting, the Secretariat presented an overview of how the concept of institutional strength in depth is reflected in the safety standards and also in the IAEA safety review services. The main conclusion was that the IAEA safety standards and review services do collectively address the three sub-systems identified in INSAG 27, and these are supported and enhanced by cross-cutting activities such as missions and training that specifically address institutional strength in depth. Notwithstanding this conclusion, several actions, including consideration for improvements of the review services, had been initiated.

At the 42nd CSS meeting, the Commission discussed a second, more in-depth assessment provided by the Secretariat of the implications of the INSAG-27 report on the safety standards and IAEA safety review services. The Commission noted that this second review had identified some further areas for potential improvement in respect of the development of updated guidance for the conduct of peer reviews, missions, training events and other events and meetings. The INSAG-27 report was also considered in the 2018 review of OSART.

Copyright related issues

The Commission discussed the copyright notice inserted in all published standards and asked for this to be reviewed by the Secretariat with a view to encouraging the use of the standards. The text included in IAEA communications granting permission to reproduce or translate standards was revised accordingly.

Small modular reactors (SMR) and Transportable Nuclear Power Plants (TNPP)

At the 46th CSS meeting the ongoing activities of the NS department on the approach to developing a safety and licensing framework for SMRs were presented, highlighting challenges related to the varied and innovative designs and the lack of operating experience. The presentation focussed on the applicability of the IAEA Safety Requirements, using a graded approach, to SMRs intended for near term deployment. Requirements and corresponding recommendations and guidance in the areas of safety assessment and design safety of nuclear power plants are of particular relevance, and for TNPPs the application of SSR-6 (Rev. 1) and GSR Part 7 are also important considerations. The work of SMR Regulators' Forum was also described.

Ongoing activities of the NE department were also presented, including the Technical Working Group on SMRs and the INPRO preliminary study on legal and institutional issues for TNPPs. The NE department focusses on information exchange, education and training, Coordinated Research Projects, as well as publication of technical and scientific practice on SMRs and TNPPs.

The Secretariat intend to continue the activities presented and informed the Commission that no immediate changes to the safety standards are planned.

Application of the concept of graded approach

IAEA activities in relation to the application of the graded approach in core regulatory functions were presented at the 46th CSS meeting. This presentation covered the background to the graded approach, the IAEA perspective, current IAEA guidance on the application of a graded approach by regulatory bodies, and IAEA initiatives on the application of graded approach in the regulation of nuclear safety. The Commission welcomed these initiatives, including the development of two TECDOCs: one on the

application of a graded approach in regulating nuclear installations; and one on the application of a grade approach in regulating the safety of radiation sources.

Supporting publications

The Commission recognized that although its scope is the review of the Safety Standards, Member States also strongly rely on a number of supporting publications that further help in the implementation of the safety standards such as the EPR Series publication as well as relevant Safety Reports and TECDOCS. In addition, it was noted that some of these supporting publications would provide the basis for future revision of existing guides of future new guides.

Exposure to Radon

The CSS also discussed issues related to exposure to radon and agreed that this should be further addressed during the next term.

4. RECOMMENDATIONS FOR THE SEVENTH TERM OF THE CSS

From a users' perspective, the CSS recommends the following as key recommendations for the next term in broad terms:

1) The users should find the standards. They should therefore be available, i.e. published and the users should find the standards they need.

   Recommendation 1 is to address the publishing delays and translation issues.

   Recommendation 2 is to identify users' needs, collect feedback in a systematic manner – preferably through NSS-OUI - and perform gap analyses.

2) The users should be able to understand and apply the standards. Stability, consistency and user-friendliness are therefore important features together with further supporting understanding of the content of the standards and avoiding misunderstanding.

   Recommendation 3 is to continue to promote the revisions by amendment and by batches (and adjust the process as necessary) and find guidance on the application of the graded approach concept.

   Recommendation 4 is to continue developing supporting publications, such as Safety Reports, Technical reports, EPR manuals, TECDOCs or similar publications, on risk communication, and on understanding concepts such as 'practical elimination'.

3) There are interfaces between safety and security and therefore the users should find publications, guidance and supporting documents on how to address these interfaces.

   Recommendation 5 is to develop publications, guidance and supporting documents on how to address the safety security interfaces.

4) The users should be able to read the standards, not only individual publications, but also the related publication, horizontally or top-down.

   Recommendation 6 is to promote the use of NSS-OUI.

5) For all of the above findings, the CSS further recommends as cross-cutting recommendation:

   Recommendation 7 is to further strengthen the Document Preparation Profiles (DPPs) for a new publication or the revision of existing publications. Robust feedback, gap and existing challenges analyses should be systematically included, as well as an identification of the expected outcomes of the proposed new publication or revision. The in-depth review of the proposed DPP with input from the Safety Standards Committees is crucial for ensuring the quality and justification of the final DPP submitted to the CSS.

2015-12-17

Appendix 1
TERMS OF REFERENCE
COMMISSION ON SAFETY STANDARDS

The Commission on Safety Standards (CSS) is a standing body of senior government officials holding national responsibilities for establishing standards and other regulatory documents relevant to nuclear, radiation, transport and waste safety.

The CSS has a special overview role with regard to the Agency's safety standards and provides advice to the Director General on the overall programme on regulatory aspects of safety.

Functions

The functions of the CSS are:

- To provide guidance on the approach and strategy for establishing the Agency's safety standards, particularly in order to ensure coherence and consistency between standards;
- To resolve outstanding issues referred to it by the committees involved in the Agency's preparation and review process for safety standards;
- To endorse, in accordance with the Agency's preparation and review process for safety standards, the texts of the Safety Fundamentals and Safety Requirements to be submitted to the Board of Governors for approval and to determine the suitability of Safety Guides to be issued under the authority of the Director General;
- To provide general advice and guidance on safety standards issues, relevant regulatory issues and the Agency's safety standards activities and related programmes, including those for promoting the worldwide application of the standards.

Membership

- Member States will be requested to nominate senior officials holding responsibilities in national regulatory organizations and having recognized expertise in nuclear, radiation, transport and waste safety, and in emergency preparedness and response. In appointing the CSS members, the Director General will seek to ensure a balance of regional approaches and experience in the areas covered by the Agency's safety standards. The Director General will appoint the members for a term of four years. The members may each be accompanied by one technical adviser when attending the CSS meetings. In addition, the Chairpersons of the five committees on safety standards will be invited to participate fully in the CSS meetings.
- Observers from specialized international organizations and relevant non-governmental bodies may be invited by the Director General to attend CSS meetings.
- The Deputy Director General, Department of Nuclear Safety and Security, or a designated substitute will participate in all CSS meetings.

Working Methods

- The Director General will appoint a Chairperson from among the CSS members for a four year term.
- A Scientific Secretary to serve the CSS will be designated by the Deputy Director General, Department of Nuclear Safety and Security.
- Ordinarily, the CSS will meet twice a year for up to five working days. Extraordinary meetings may be called as required.
- Meetings will be conducted in English.
- The CSS will submit a mid-term report and an end of term on its work to the Director General.

Resources

- The Secretariat will provide all the resources necessary to permit the efficient working of the CSS.
- All costs involved in the participation of each CSS member, including travel and per diem expenses, will be borne by the nominating Member State.

Appendix 2
Commission membership for the period 2016-2019

Members

Argentina	Mr A. J. González
Australia	Mr C.-M. Larsson
Brazil	Mr P. F. Lavalle Heilbron Filho, Mr A. Gromann De Araujo Goes and Mr R. Di Prinzio
Canada	Mr R. Jammal
China	Mr Y. Zhao and Mr J. Yu
Czech Republic	Ms D. Drábová (Chairperson)
Egypt	Mr M.R.M. Ezz El-Din
Finland	Mr P. Tiippana
France	Mr J.-L. Lachaume and Ms A.-C. Rigail
Germany	Mr A. Vorwerk and Mr T. Elsner
India	Mr S.A. Bhardwaj and Mr G. N. Rao
Israel	Mr M. Markovits
Japan	Mr T. Fuketa, Mr M. Sakurada and Mr T. Yamada
Korea, Republic of	Mr G.-H. Yoo, Mr M. Baek, Mr J. S. Uhm and Mr B. Jang
Malaysia	Mr H. Mohd Ali
Pakistan	Mr M.A. Habib and Mr Z.A. Baig
Russian Federation	Mr A. Ferapontov
Slovakia	Ms M. Žiaková
South Africa	Mr C.O. Phillips
Spain	Mr J. Dies Llovera
Sweden	Mr I. Lund

Switzerland	Mr H. Wanner
United Arab Emirates	
United Kingdom	Mr D. Senior and Mr A. Hart
United States of America	Mr G. Tracy, Mr. F. Brown, Mr R. Lewis and Mr S. West
Chairs of the Review Committees:	
EPReSC	Ms A. Heinrich
NSGC	Mr B. Dal and Mr S. Bayer
NUSSC	Mr F. Feron and Mr P. Webster
RASSC	Mr G. Massera and Ms R. Bly
TRANSSC	Mr P. Hinrichsen
WASSC	Mr G. Williams and Ms M. Golshan

Observers

AdSec Representative	Mr R. Awad and Mr L. Vinhas
EC Representative	Mr M. Garribba
ICRP Representative	Ms C. Cousins
INSAG Representative	Mr R. Meserve
OECD/NEA Representative	Mr H. Nieh and Mr N. Muroya

Appendix 3
Summary of EPReSC work during the 6th CSS term (2016-2019)

From Ann Heinrich, EPReSC Chairperson

During this period, EPReSC held eight meetings (EPReSC-2 to 9), two Joint Sessions with other Safety Standards Committees (WASSC and RASSC), and one Joint Session with the NSGC.

From the activities conducted by EPReSC, the following aspects might be highlighted:

- Four draft Safety Standards were developed under the lead of EPReSC. (DS474, Arrangements for Termination of a Nuclear or Radiological Emergency was published in 2018 as GSG-11. The Safety Guide on Arrangements for Public Communication in Preparedness and Response for a Nuclear or Radiological Emergency (DS475) was approved by CSS in December 2018 and is expected to be published soon. The Safety Guide on Preparedness and Response for an Emergency during the Transport of Radioactive Material (DS469) was approved by the CSS in December 2019 and is now in the process for publication. DS504 (Revision of GS-G-2.1, Arrangements for Preparedness for a Nuclear or Radiological Emergency) is currently at step 5.
- In total, 26 draft Safety Standards (including 11 DPPs) were approved at various steps without comments or with minor comments. One additional draft (DS521-DPP Radiation Protection Programmes for the Transport of Radioactive Material) was rejected at Step 3, modified, and submitted to the following meeting, where it was approved.
- In total, seven draft Nuclear Security Guidance documents (including two DPPs) were cleared by EPReSC. One Implementing Guide (NST004 Draft Implementing guide on Developing a National Framework for Managing the Response to Nuclear Security Events) was rejected at Step 11 in EPReSC-2. After discussions with the NSGC and interactions at the Secretariat level, a revised version was cleared by EPReSC and approved by the NSGC.
- The interface between EPR and nuclear security was identified as a relevant aspect for EPReSC to address. In particular, during discussions with the NSGC to agree on the new text for NST004, an important issue was identified related to ensuring that the security components of emergency response are properly characterized and integrated in the overall emergency response framework.
- Multiple discussions were held to define priorities for the development of guidance (new Safety Standards or the revision of existing ones) in the EPR field. EPReSC developed a planning document (the “Road Map” of priorities), which was subsequently revised twice and will be periodically reviewed in the future.
- EPReSC has expressed an interest in being more involved in the process for the development of technical guidance documents in EPR produced by the Secretariat (EPR Series publications). Provisions have been included in the EPReSC Operating Guidelines to ensure EPReSC involvement and feedback in this process.

- As other Safety Standards Committees and upon request of DDG-NS, EPReSC performed a self-assessment of its work and working methods. A number of improvements were identified and included in the conduct of EPReSC's activities.
- Strategic aspects were included in the agendas of the EPReSC meetings. Among them, topics related to public communication were given special attention. In particular, EPReSC strongly supported the need for including the impact of the UNSCEAR 2012 Report on Attributing Health Effects and Inferring Risks from Radiation Exposure to the Safety Standards. Other aspects that were included among these strategic topics were the activities in support of the implementation of requirements set forth in GSR Part 7.

Appendix 4
Summary of NUSSC work during the 6th CSS term (2016-2019)

From Philip Webster, NUSSC Chairperson

Priority continued to be given to the review and revision of Safety Requirements, following the gap analysis performed by the Secretariat and reviewed earlier by NUSSC and the other Safety Standard Committees. An innovative approach was used, whereby five Safety Requirements were revised by amendment under a single DPP (DS462).

While the revision by amendment of the five Safety Requirements was in-progress, the Committee had turned its attention to review the Safety Guides to align them with the Safety Requirements. The task of considering whether the IAEA safety recommendations were still appropriate turned not to be as straightforward as it had been for the Safety Requirements. This was caused by the absence of an equivalent to 'overarching requirements', the large number of recommendations contained in the IAEA Safety Guides and the lack of clear links between some requirements and their associated recommendations. It was therefore not possible to perform a detailed gap analysis; instead priority Safety Guides for revision were identified using judgement.

Of the eight 'priority' Safety Guides which NUSSC identified between 2012 and 2015, only three have so far been published (SSG-53, SSG-54, SSG-2 Rev 1), with one more awaiting final editing following its approval by CSS (DS481); the remaining four are at either step 11 or 12, despite continuous pressure having been applied at NUSSC meetings, and seem unlikely to be published during the current NUSSC term.

At its first meeting in 2018, NUSSC decided on priorities for the 8th Term, based on CSS and NUSSC 7th Term recommendations. Priorities were grouped into achievable, short-term ones and more challenging, mid-term ones that might continue into the 9th Term. The achievable short-term priorities for the NUSSC 8th Term and progress against them are:

- Complete publication of priority Safety Guides for revision (DS498, 490, 494 remain);
    - This is unlikely to be achieved, due currently to the backlog in final editing.,
- Re-visit 'holistic' review of Safety Guides performed post-NUSSC 43 to identify further priority revisions of Safety Guides compared against ongoing work;
    - NUSSC 48 decided there was no need to re-visit the 'holistic' review.
- Complete the revision of seven closely-interrelated operational Safety Guides (DS497);
    - This will not be achieved, since the technical editorial review will take one year.
- Complete drafting of Safety Guide on Design Extension Conditions and Practical Elimination (DS508);
    - This will not be achieved, due to the failure of three CS to achieve consensus.
- Identify ways to improve DPP descriptions of the need for a new or updated document;
    - Progress has been made; a template for presentations has been developed.
- Improve interactions with Nuclear Security Guidance Committee to identify topics or DS of common interest and to agree the path forward.
    - A joint meeting will be held in June 2020.

In a novel development, NUSSC engaged in the production of a TECDOC of which it became aware 'Considerations on the Application of the IAEA Safety Requirements for the Design of Nuclear Power Plants', since this was covering Design Extension Conditions and Practical Elimination, concepts of which had been introduced in the Safety Requirements SSR-2/1. Work is now underway to turn the relevant parts of the TECDOC into a Safety Guide under DS 508.

The NUSSC Chair engaged IAEA senior management several times on the resources being applied to final editing prior to publication, due to unhappiness on the part of the Committee with the delays encountered on revising priority Safety Guides.

NUSSC also responded to the CSS action to determine if any Safety Standards on which NUSSC has the lead need to be strengthened in light of the 2012 UNSCEAR Report; conclusion was not. Arising from that action, NUSSC also responded to the CSS directive to consider whether SF-1 'Fundamentals of Nuclear Safety' should be revised; conclusion was not.

Appendix 5
Summary of RASSC work during the 6th CSS term (2016-2019)

From Ritva Bly, RASSC Chairperson

During the 6th CSS Term from 2017 to 2020, eight meetings of RASSC were organized. Four of these included joint sessions with the Waste Safety Standards Committee (WASSC) and one included a joint session with the Emergency Preparedness and Response Standards Committee (EPReSC). During these four years, RASSC continued its work to develop safety standards to support General Safety Requirements Part 3 (GSR Part 3 - International Basic Safety Standards) while placing increased emphasis on implementation of both the requirements and associated guidance.

An important milestone was the publication of the three safety guides on protection of workers, patients, the public and the environment, supporting the related requirements in GSR Part 3:

- Occupational Radiation Protection (GSG-7)
- Radiation Protection and Safety in Medical Uses of Ionizing Radiation (SSG-46)
- Radiation Protection of the Public and the Environment (GSG-9)

The uses of radiation involving human imaging for non-medical purposes are increasing. These uses include security screening at airports and of both staff and visitors entering prisons. Of particular concern is the exposure of children to identify potential for certain sports. The safety guide *Radiation Safety of X-Ray Generators and Radiation Sources Used for Inspection Purposes and for Non-Medical Imaging* has been finalized and is awaiting publication in early 2020.

It was agreed that the existing safety guide *Application of the Concepts of Exclusion, Exemption and Clearance* (RS-G-1.7) would be revised with the issues of exemption and clearance being addressed in separate documents. RASSC has discussed the development of both documents at each meeting since the DPP was approved at the end of 2017. RASSC also agreed a comprehensive set of documents dealing with exposure due to radon in homes and workplaces.

RASSC has welcomed the introduction of national workshops addressing application of GSR Part 3; these are in addition to a programme of regional workshops addressing specific topical areas in radiation protection. RASSC has been informed at each meeting of the key issues identified in each workshop. Justification and optimization are challenging for many national regulatory bodies, as is the application of the graded approach. The approach to managing existing exposure situations requires further guidance as national authorities are unclear as to what, if anything, they should do to reduce exposures.

RASSC has a history of organizing 'topical sessions' to discuss new and emerging issues in radiation protection. During 2016 to 2019, the following topical sessions were organized:

- Challenges in Regulating NORM industries
- Implementation of the International Basic Safety Standards
- The System of Occupational Radiation Protection
- Radiation Exposure in Airline Travel and Space Travel
- Evidence of Health Effects at Low Doses and Dose Rates
- Communicating Radiation Risks
- Non-Medical Human Imaging

Over several meetings, RASSSC discussed, and developed position papers on, the UNSCEAR report *Attributing Health Effects to Radiation Exposure and Inferring Risks* and the review of the Safety Fundamentals (SF-1). Both topics are discussed in detail in the main body of the end-of-term report.

All RASSC meetings are now live-streamed, providing the opportunity for non-travelling members of the Committee and other experts to join the meeting online and contribute to the discussion.

Appendix 6
Summary of TRANSSC work during the 6th CSS term (2016-2019)

From Paul Hinrichsen, TRANSSC Chairperson

Over the period, in question, attendance at TRANSSC has averaged 75 delegates representing 28 Member State and 10 Observer organisations.

Primary TRANSSC documents:

DOCUMENT	REVISION STATUS	PUBLICATION STATUS
SSR-6 (Regulations)	2018 Edition	Published in 2018
SSG-26 (Guidance Material)	2018 Edition	Approved, in 2019, for publication.
SSG-33 (Schedules)	2018 Edition	Approved, in 2019, for publication.
TS-G-1.2 Preparedness and Response for an Emergency During the Transport of Radioactive Material	This document was passed to EPReSC as a document within its Portfolio.	Approved, in 2019, for publication
TS-G 1.3 Radiation Protection Programmes for the Transport of Radioactive Material	The document is currently under Revision.	SPESS Step 3
TS-G 1.4 The Management System for The Transport of Radioactive Material	There are currently no plans to Review/Revise this document at this time.	
TS-G 1.5 Compliance Assurance for the Safe Transport of Radioactive Material	The document is currently under Revision.	SPESS Step 7
PDSR Package Design Safety Report	The document is currently under Revision.	SPESS Step 11

Supplementary TRANSSC documents:

- Transport/Security Interface Document: a draft "Managing the Interface between Safety and Security for Low-Activity Radioactive Material in Transport", TRS 1001, was finalised in March 2018.
- Technical Basis Documents: The Review/Revision of the TRANSSC Technical Basis Document (TBD) is ongoing. There is currently no plan to formally publish the TBD as it is seen as a "living" document which will be subject to ongoing review/revision.

Instruments of the Committee:

TRANSSC Technical Expert Groups (TTEGs)
The Committee has established the following four TRANSSC Technical Expert Groups (TTEGS) to serve as Standing Working Groups within the Committee:

- Package Performance and Assessment
- Operational Matters
- Radiation Protection
- Criticality

These TTEGs serve as forums for the discussion and resolution of issues which have either arisen, during TRANSSC meetings, or which have been brought to TRANSSC from other bodies. Final decision on such issues is always TRANSSC responsibility.

Transport e-learning

The eLearning was launched in May 2019. A second version including improvements and a voice over is under development. Module 10, containing additional guidance on diverse aspects of transport safety is also under development. This learning platform is open to all Member States.

Report on Selected Ad-Hoc Issues

Regarding the need for the IAEA to revise the Transport Safety Standards, in the light of the 2012 UNSCEAR Report on Attributing Health Effects to Ionising Radiation and Inferring Risks, TRANSSC concluded that such a revision as not necessary.

Regarding the need for the IAEA to revise the Safety Fundamentals 1 (SF-1), in the light of the 2012 UNSCEAR Report on Attributing Health Effects to Ionising Radiation and Inferring Risks, TRANSSC concluded that such a revision as not necessary.

Appendix 7
Summary of WASSC work during the 6th CSS term (2016-2019)

From Mina Golshan, WASSC Chairperson

During the 6th term of the CSS (2016–2019), the Waste Safety Standards Committee (WASSC) held eight meetings. The WASSC concluded its 7th term and started the implementation of its programme for the 8th term, under the Chairmanship of Dr Mina Golshan.

As laid down in the four-year report for the 7th term (2014–2017) of the Committee, WASSC members identified the review of the IAEA General Safety Requirements GSR Part 5, Predisposal Management of Radioactive Waste[2], as one of the priorities for the 8th term (2018–2020), to decide whether there is a need for revision. A questionnaire has been distributed to WASSC members in October 2019 to gather their feedback on the usefulness, strengths and weaknesses of GSR Part 5 as well as of their views on the needs for GSR Part 5 revision and on aspects in GSR Part 5 that can be improved. The responses to the questionnaire will be analysed and documented in a summary report that will be submitted to the 49th WASSC meeting (24–26 June 2020) for decision making.

During the 6th term of the CSS, seven Waste Safety Guides have been published (GSG-9, GSG-10, SSG-40, SSG-41, SSG-45, SSG-47 and SSG-49), another two Waste Safety Guides have been endorsed by the CSS but not yet published (DS459 and DS489), and three DPPs for Waste Safety Guides have been approved by the CSS (DS500, DS505 and DS512). The majority of Draft Safety Standards led by WASSC are either already approved for publication or at an advanced stage of development. However, WASSC members discussed extensively the development of guidance on: (i) Exemption and clearance (revision of Safety Guide RS-G-1.7 by DS499 and DS500, jointly with RASSC); (ii) Existing exposure situations (revision of Safety Guide WS-G-3.1 by DS468); (iii) Policy and strategy for radioactive waste and spent fuel management, decommissioning, and environmental remediation (DPP for a new Safety Guide under development). Thus, the WASSC gave more attention than in the past to the development of documents such as Safety Reports and TECDOCs, supporting the application of existing Safety Standards, including on the following topics: (i) Operational safety for geological disposal facilities; (ii) Stakeholder involvement in planning disposal; (iii) Transition from operation into decommissioning; and (iv) Determining waste acceptance criteria. As a result, two new projects of Safety Reports are under consideration: one on waste acceptance criteria for disposal, and another one on the transition of nuclear facilities from operation into decommissioning.

In response to an action requested by the CSS at its 43rd meeting, the WASSC Chair, Dr Mina Golshan, circulated in December 2018 a questionnaire to WASSC members for undertaking a review of the IAEA Safety Fundamentals SF-1, and reporting back about the findings to the CSS. WASSC, as all Safety Standards Committees, concluded that there was no justification for an immediate revision of SF-1, but recommended that, at some time in the future, a new review should be initiated with a dedicated framework to be established for the formal involvement of the current co-sponsors and possible additional co-sponsors.

Joint sessions of WASSC with other Committees have continued the policy, established during previous terms, of discussions on key topical issues of direct relevance and interest to the Committee, involving presentations from the Secretariat and external experts. Challenges in Regulating NORM Industries were addressed during WASSC-41, jointly with RASSC-40. On Transition of Facilities from Operation

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[2] The publication is available in all official UN languages under the following hyperlink: https://www.iaea.org/publications/8004/predisposal-management-of-radioactive-waste.

into Decommissioning, it was decided that the Secretariat will assess the existing IAEA publications on the transition phase – Safety Reports Series No. 36 and Technical Reports Series No. 420 – and to prepare a gap analysis to be presented at a future WASSC meeting in the current term. A TECDOC on Inadvertent Human Intrusion in a Safety Case for Radioactive Waste Disposal, which is currently under development in the Radioactive Waste and Spent Fuel Management Unit, has been presented to the WASSC members. Member States presentations on in-situ decommissioning (entombment) and in-situ disposal of radioactive waste on nuclear sites have been provided by Canada and the United Kingdom at WASSC-48. In January 2019, it was also agreed to further discuss variations in the approach to the removal of spent fuel prior to decommissioning and assess if further guidance on this topic would also be useful.

WASSC continued improving interactions with other Committees. The Committee met jointly with RASSC at the 41st, 43rd, 44th and 46th meeting. A Joint meeting with EPReSC was organised at WASSC-42 in November 2016 and another one with TRANSSC at WASSC-48 in October 2019.

As demonstrated through the work described above, to-date WASSC has completed the review of a large number of safety standards and will be the first committee to conclude the revision of the safety standards for which it is the lead committee. It is therefore important that it considers its strategic role in shaping future standards and guidance, taking into account the challenges the industry and the regulators face worldwide.

Appendix 8
CSS INTERESTS FOR ITS SIXTH TERM[3]

1) Harmonize safety standards and security recommendations, as well as the IAEA's process for developing them, to facilitate accomplishing the common objective of safety and security - to protect people and the environment. Such harmonization will assist operators, users of radioactive sources, and regulators in accomplishing this common objective. Actionable steps for safety and security harmonization to be initiated, with involvement of the NSGC, during the sixth CSS term could include:

- Promoting a common development process for safety standards and security recommendations and associated guidance, including further involvement of the CSS.
- Consolidating safety standards and security recommendations for radioactive source users consistent with the Code of Conduct on the Safety and Security of Radioactive Sources.
- Consolidating safety standards and security recommendations for transportation of radiation sources and nuclear material consistent with United Nations standards.
- Progressing on a common glossary for nuclear security and safety.
- On-going progress on all items. Similar process for all Committees. Information of the CSS for interface DPPs and drafts. Interface aspects being addressed and reviewed in a systematic manner. Revised guidance (SPESS C) issued in February 2019 to enhance this systematic review. Guidelines on managing safety-security interfaces to be issued in the Technical Report Series (ranking higher than TECDOCs) starting with the number 1000. The first TRS 1000 in publication is based on the material presented at the TM held in October 2018. The second TRS (No. 1001) also in publication covers the managing of the Interface between Safety and Security for Normal Commercial Shipment of Radioactive Material. A draft safety security interface publications plan presented at CSS 46 in December 2019. A Nuclear Security Glossary reviewed by NSGC in October 2018 and in publication. A future glossary will then be established to serve as a reference for future publications.

2) On the basis of experience gained from existing Review Committees including the newly established EPReSC, perform a review of the safety committees structure and recommend to the DG a future optimum structure that should be adopted to meet the needs of the IAEA Secretariat and Member States for the development of high quality standards and guidance in the most effective and efficient way. Identify options to further enhance the benefit of holding joint sessions of the Review Committees.

- Many joint sessions organized regularly between Committees. Committees' structure to be reviewed at the end of their current term (end of 2020).

3) Considering the observations and lessons in the Director General's Fukushima Daiichi Accident Report, confirm those areas that the safety committees need to continue to focus on, and progress the development of new standards and guidance to address the remaining gaps. These are expected to include, for example, post-emergency recovery procedures, criteria for food, drinking water, non-food commodities and methodology for their development.

Emergency Exposure Situations

- Generic criteria for food, milk and drinking water in a nuclear or radiological emergency (for use in affected areas and for international trade) are established in GSR Part 7 (2015) and default operational intervention levels are provided in GSG-2 (2011). Methodology for development of operational intervention levels for NPP emergency was published in 2017 within EPR Series (EPR NPP OILs 2017) and standard training package was developed and offered to Member States through the training courses at regional and national levels. Following the same approach, the methodology for development of operational intervention levels specific to a radiological emergency is in process of finalization (draft publication EPR RAD OILs) and is expected to be published in 2020. A pilot workshop on this methodology for development of

[3] More details on the discussion and on other important items are recorded in the minutes of the 39th and 40th CSS meetings held in 2016.

operational intervention levels specific to a radiological emergency is scheduled for October 2020.

- Generic criteria for non-food commodities in an emergency (for use in affected areas and for international trade) are established in GSR Part 7 (2015) and the methodology for deriving default operational intervention levels for non-food commodities for use during the transition phase is provided in GSG-11 (2018), which is co-sponsored by ten international organizations. The above-mentioned draft EPR RAD OILs document under development will go further by providing also default operational intervention levels for non-food commodities in an emergency derived on the methodology provided in GSG-11.
- Additional progress is made in the revision of GS-G-2.1 (DS504) to ensure that it provides sufficient guidance to support GSR Part 7 implementation for a number of requirements contained therein, taking into account lessons learned from past emergencies including the Fukushima Daiichi NPP accident.

Existing Exposure Situations

- A project was also initiated on "Radionuclides in Food and Drinking Water in Non-Emergency Situations" with a joint FAO/IAEA/WHO Secretariat. The project takes account of radiation doses from both natural and human-made radionuclides.
- In response to a request from the Codex Committee on Contaminants in Food of the Joint FAO/WHO Codex Alimentarius Commission, a draft discussion paper is being developed to "provide information on the radioactivity of both human-made and natural origin that can be found in feed and food (including drinking water) in normal circumstances (i.e. not in an emergency exposure situation following a nuclear or radiological emergency)" and identify the issues related to the presence in normal circumstances of radioactivity in feed and food (including drinking water) of both human-made and natural origin, such as feed and food safety, transfer of radioactivity from feed to food of animal origin, possible public health risks via intake of food, trade issues, etc."
- The issue of non-food commodities is being considered as part of the revision of the safety guide Application of the Concepts of Exclusion, Exemption and Clearance (RS-G-1.7). In parallel, a discussion document on all these issues was finalized under a Practical Arrangement with Argentina.

Planned Exposure Situations

- The new Safety Guide on Assessment of the Application of General Requirements for Design of Nuclear Power Plants is also under preparation (DS508), in addition to a significant list of initially identified priorities.

4) After appropriate pilot testing to demonstrate performance, implement the IT platform for the development, review, dissemination, and revision of IAEA safety standards and security recommendations and associated guidance. Based on early experience in applying the IT platform, utilize its functionality to optimize and enhance the effectiveness and efficiency of the process for the production of safety standards and security recommendations and associated guidance.

- Feedback mechanism in place and access right available for all members of the Committees and the CSS. Search capability used to define and optimize the process for revision of sets of safety guides with DPPs covering several safety guides. This includes the projects DS497 for NPPs, DS509 to 511 for Research Reactors and DS516 to 518 for Fuel Cycle Facilities.

5) Perform a holistic review of the complete collection of Safety Guides and as appropriate a prioritization for new guides or revision of existing ones.

- Done by all Committees. This is a standard item for all Committees. An updated status of the long-term structure of safety standards prepared in October 2019 for consideration by the Safety Standards Committees and the CSS.

6) Clarify the radiation protection system in existing exposure situations providing guidance to decision makers and experts on preparing dialogue and elaborating clear messages to stakeholders based on addressing "prevailing circumstances".

- RASSC and WASSC requested the Secretariat to develop a new guidance document on living in and maintaining economic activities in a contaminated environment. The preparation of a Safety Report entitled "Living and Working in Areas Affected by Past Nuclear or Radiological Events and Activities: Experience from Affected Areas" has begun and several Consultant meetings have been held.
- Work referred to under the 'existing exposure situations' component of item 3 is also relevant here.

7) Finalize the development of the guidance on transition from emergency situations to recovery situations and the guidance on communication before, during and after an emergency situation.

- The new Safety Guide on Arrangements for the Termination of a Nuclear or Radiological Emergency (IAEA Safety Standards Series No. GSG-11) was published in March 2018 and co-sponsored by ten international organizations. It provides detailed guidance on transition from an emergency exposure situation to either an existing exposure situation or to a planned exposure situation. Training materials were also developed and workshops to support its implementation are already offered and delivered at regional and national levels.
- The new Safety Guide DS475 on Arrangements for Public Communication in Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Safety Standards Series No. GSG-14) is in publication.

8) Develop, in cooperation with the relevant international organizations, guidance on radiation protection in exposure situations characterized by very low doses and dose rates.

- This will be one of the key elements of the Safety Report that will be prepared following action 43.03 of the CSS. CS organized in March 2019 to prepare a DPP. A progress report on the preparation of the Safety Report is presented at the 46th CSS meeting.
- GSR Part 3 states that a graded approach shall be taken to the regulatory control of radiation exposure, so that the application of regulatory requirements is commensurate with the radiation risks associated with the exposure situation, which is the typical approach applicable for control of exposures to low doses. This is also further developed in the Safety Guide GSG-8 (2018) on Radiation Protection of the Public and the Environment, in the Safety Guide GSG-10 (2018) on Prospective Radiological Environmental Impact Assessment for Facilities and Activities, including approaches to consider uncertainties. There are also guides related to discharges (GSG-9), remediation of legacy sites (DS468, revision of WS-G-3.1) and NORM related issues (DS459, revision of WS-G-1.2). This is also addressed through the exemption and clearance processes.
- Safety Standards on EPR (GSR Part 7, GSG-2 and GSG-11) apply for any emergency exposure situation (which could result in doses at different levels) and provide requirements and guidance for radiation protection even in circumstances of low doses and low dose rates. In particular, GSG-11 (2018) provides detailed guidance on this considering that such situations involving low doses and low dose rates come in focus more during the later phases of an emergency (e.g. the transition phase).