43rd Meeting of the Commission on Safety Standards

11–13 April 2018

IAEA Headquarters, Vienna

Report of the Meeting

17 July 2018

Overview of main results of the meeting

A. The following draft Safety Standards were endorsed:

- DS472: Draft Safety Guide on Organization, Management and Staffing of the Regulatory Body for Safety
- DS473: Draft Safety Guide on Functions and Processes of the Regulatory Body for Safety
- DS479: Draft Safety Guide on Operating Experience Feedback for Nuclear Installations.

B. The following DPPs were approved:

- DS508: Draft Safety Guide on Assessment of the Application of General Requirements for Design of Nuclear Power Plants
- DS509: Draft Safety Guide on revision by amendment of Safety Guides for Research Reactors (NS-G-4.1 to NS-G-4.6, SSG-10 and SSG-37)
- DS510: Draft Safety Guide on revision of Safety Guides for Research Reactors (SSG-20 and SSG-24)
- DS511: Draft Safety Guide on revision of Safety Guides for Research Reactors (SSG-22)
- DS512: Draft Safety Guide on Borehole Disposal Facilities for Radioactive Waste (revision of SSG-1).

C. Policy discussion:

- The Commission endorsed the recommendations of the consultants' meeting of 14–16 February 2018 to consider the implications of the 2012 UNSCEAR Report "Attributing Health Effects to Ionizing Radiation Exposure and Inferring Risks" for the development of IAEA safety standards. Furthermore, the Commission formulated recommendations for the safety standards committees to take actions to begin implementing these recommendations at their meetings in June/July 2018.

1. Opening Session

1.1 Opening of the Meeting

Mr Juan Carlos Lentijo, Deputy Director General and Head of the Department of Nuclear Safety and Security, opened the 43rd meeting of the Commission on Safety Standards and welcomed all members. He noted that there were six new CSS participants (from China, France, Japan, the Republic of Korea, the United Kingdom and the United States of America).

Mr Lentijo noted that the meeting agenda included the end of term reports from the Safety Standards Committees and the Nuclear Security Guidance Committee and he expressed his appreciation to all the Committee Chairs (outgoing, remaining and new) for their contributions to the work of the Agency. Mr Lentijo was pleased to note that a gender balance had been achieved in the appointment of the Committee Chairs.

Mr Lentijo informed the Commission that the meeting agenda contained three draft Safety Guides for approval: on the organization of the regulatory body (DS472); on the functions of the regulatory body (DS473); and on operating experience feedback for nuclear installations (DS479). The meeting agenda also included five draft project proposals for new and revised Safety Guides, and three draft Nuclear Security Series publications presented for information.

Mr Lentijo noted that the CSS would be presented with the results of a consultants' meeting that considered the implications of the 2012 UNSCEAR report "Attributing Health Effects to Ionizing Radiation Exposure and Inferring Risks" on the development of IAEA safety standards. This was a key policy issue for the CSS to discuss at the meeting.

Finally, he informed the Commission about the following upcoming important events:

- Third International Conference on Human Resource Development for Nuclear Power Programmes, Gyeongju, the Republic of Korea, 28–31 May 2018;
- International Symposium on Communicating Nuclear and Radiological Emergencies to the Public, Vienna, Austria, 1–5 October 2018;
- International Conference on Challenges Faced by Technical and Scientific Support Organizations in Enhancing Nuclear Safety and Security, Brussels, Belgium, 15–18 October 2018.

Mr Lentijo concluded by thanking all participants for their efforts and wished them a very productive meeting.

1.2 Introductions; Adoption of the agenda; Adoption of the 42nd CSS meeting report

Ms D. Drábová, Chair of the Commission, welcomed all participants. A complete list of participants is provided in Annex I.

The agenda for the meeting was approved and is provided in Annex II.

Ms Drábová informed the Commission that the draft report of the 42nd CSS meeting had been made available and no comments had been received. The report of the 42nd CSS meeting was approved and would be posted on the CSS website **[Annex III, Action 43.01].**

Ms Drábová also reported that the mid-term report for the 6th term of the CSS had been finalized and posted on the CSS website.

1.3 Administrative arrangements for the meeting; Status of the overall structure; Status of the endorsed standards; Response to actions from the previous CSS meetings

Mr D. Delattre informed the Commission of the administrative arrangements for the meeting. He noted that all material had been made available more than two months in advance of the meeting[1] for effective review by the Commission.

Mr Delattre presented the status of the roadmap for the long term structure of the General Safety Requirements and the Specific Safety Requirements, as well as the status of the endorsed safety standards. He informed the Commission that one safety standard (GSG-11) had been published since the last CSS meeting, and noted that 10 safety standards endorsed by the Commission were in the publishing process. Comprehensive, up-to-date information on the status of all standards (published and in draft) as well as on the status of drafts of the Nuclear Security Series that are interface documents, is available at: http://www-ns.iaea.org/committees/files/CSS/205/status.pdf.

Mr Delattre provided information on the response to the actions from the 42nd CSS meeting (see Annex IV). He also presented information on the recent timescales for publication, which showed that the time between Step 8 (soliciting comments by Member States) and publication, and between Step 11 (2nd review by the review committees) and publication had both reduced significantly. This was considered to be due to the changes to the SPESS process and the additional effort available for editing publications.

Mr P. Tiippana noted that the publication timescales were improving, but suggested that there was still room for further improvement. He also asked whether there were plans to harmonize the Safety Glossary and the Security Glossary. Mr Delattre replied that the contents of the Safety Glossary and the Security Glossary were approximately 80% harmonized; there are plans to address this further to reach >95% harmonization, if possible.

2. Reports from the Safety Standards Committees and the Nuclear Security Guidance Committee

The presentations from the review committees included reports from the previous meetings plus the end of term reports. A summary of the common issues arising from these reports had been posted on the CSS website prior to the CSS meeting, and is reproduced in Annex V. It was agreed that the end of term reports from each Committee would be posted on the CSS website **[Annex III, Action 43.02].**

2.1 Emergency Preparedness and Response Standards Committee (EPReSC)

Ms A. Heinrich, EPReSC Chair, presented a summary of the end of term report and commented that it had been an excellent first term. Ms Heinrich also reported on the fifth meeting of EPReSC. EPReSC had approved four draft standards for submission to CSS, one draft standard for submission to Member States for comment, and three DPPs. EPReSC had cleared two revised drafts and one DPP of the Nuclear Security Series.

EPReSC had also discussed plans for more involvement in the development of future EPR Series publications and other guidance documents. Discussions had also been held on the 2012 UNSCEAR report on attributability of health effects and inferring risks (see Agenda Item 5.1) and EPReSC intend to establish a working group to further review EPR safety standards in the light of the issues arising from this report. In addition, EPReSC had received presentations on a variety of topics, including: the INES Manual; EPREV guidelines; the upcoming international symposium on public communication during emergencies; EPR arrangement in Australia, Germany and Sweden; as well as reports from EC, NEA, WNTI, WHO and FAO.

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[1] This includes the pre-editing versions of Draft Safety Guides DS472, DS473 and DS479: the fully edited versions were added to the website 1 month in advance of the meeting (for DS472 and DS473) and 2 weeks in advance of the meeting (for DS479).

Ms Heinrich's presentation is available on the CSS web site.

Mr R. Jammal asked whether EPReSC was planning to keep the application of the INES Manual under review. Ms Heinrich replied that EPReSC were keen to stress that INES is intended as a communication tool and should be applied only within that context.

2.2 Nuclear Safety Standards Committee (NUSSC)

Mr F. Feron, outgoing NUSSC Chair, presented a summary of the end of term report and also reported on the 44th NUSSC meeting at which six draft standards had been approved for submission to the CSS, including DS483 for which a specific working group meeting had been held. NUSSC had also approved two draft standards for submission to Member States for comment, and four DPPs. NUSSC had also given 'technical approval' to DS481, which would be submitted to the next NUSSC meeting for 'final approval' following the Technical Editorial Review. NUSSC had also cleared two revised drafts of the Nuclear Security Series.

NUSSC had also held discussions on the development of a DPP for DS513 and received a feedback presentation from Belgium on the national regulatory arrangements and current developments.

Mr Feron's presentation is available on the CSS web site.

Mr Tiippana noted that NUSSC wanted to encourage cooperation with other standards development organizations (ISO, IEC), and strongly supported this approach. He also noted that, although NUSSC had recommended a prioritization of revisions to Safety Guides, many of these guides had not yet been published. Mr Feron replied that NUSSC was exploring ways to speed up the revision process, and that the simultaneous revision of sets of related Safety Guides should help, although it was too early to decide if all the potential benefits of this approach could be delivered. Mr Feron also noted that publication timescales of the order of 1 year (following review and approval) were acceptable in relation to consensus publications.

Mr C.-M Larsson noted that little progress had been made with respect to establishing standards for transportable reactors and SMRs, and asked what activities NUSSC had undertaken with respect to these. Mr Feron replied that there had been initial discussions in terms of the applicability of the existing safety standards to such reactors, and that SMRs were to be given a higher priority by NUSSC in future. Mr Lentijo informed the CSS that, in response to a GC resolution, NS were establishing a task force to prepare an action plan on SMRs, including the development of safety-related publications. He noted that safety standards are based on established good practice and there is currently only a limited amount of such information available in respect of SMRs. Mr Lentijo indicated that the proposals produced by the task force would be presented to the CSS.

Mr M. Markovits supported the NUSSC proposal to extend the scope of safety guides to other nuclear facilities, where appropriate. He asked whether there was any correlation between the positions agreed in NUSSC and the comments supplied by Member States at Step 8. Mr Feron indicated that it was difficult to establish any correlation due to the large variety of comments received.

Mr I. Lund, Mr R. Lewis and Mr Jammal all agreed that the NUSSC focus should now be on a prioritized revision of safety guides to ensure that these are fit for purpose. Mr Lewis noted that this would require substantial resources, and asked about the process for prioritization of publications for revision. Mr Jammal supported this question and asked about the role of NUSSC and the CSS in this process. Mr Feron replied that NUSSC had suggested priorities from its own perspective for the CSS to consider. Mr Lentijo stated that a number of mechanisms for prioritization already exist and that the Agency needed to consider the priorities of all Member States.

Mr M. Gregoric commented that it was very positive that NUSSC wanted a joint meeting session with NSGC. He suggested that there were areas where a joint approach should proceed, such as culture for safety and security. Mr Gregoric supported the priority given by NUSSC to SMRs and suggested that fusion technology should also be considered by NUSSC.

Mr H. Wanner supported the NUSSC priorities and suggested that more detail could be provided on the application of new standards to existing installations.

2.3 Radiation Safety Standards Committee (RASSC)

Mr G. Massera, outgoing RASSC Chair, presented a summary of the end of term report and also reported on the 43rd RASSC meeting at which three draft standards had been approved for submission to the CSS. In addition, RASSC had approved one draft standard for submission to Member States for comment, and three DPPs. RASSC had also cleared three drafts of the Nuclear Security Series.

RASSC had also held a topical session on radiation exposure in airline travel and space travel, and received a presentation on optimization versus minimization.

Mr Massera's presentation is available on the CSS web site.

Mr Lund supported the RASSC priorities for the next term, especially the focus on the implementation of GSR Part 3. Mr Tiippana queried whether RASSC had too many priorities: Mr T. Colgan responded that the priorities had been identified during RASSC meetings and as part of the self-assessment process: from these, a list of five main priorities (see Annex V) had been agreed using a questionnaire to RASSC members.

2.4 Transport Safety Standards Committee (TRANSSC)

Mr P. Hinrichsen, Chair of TRANSSC, presented the end of term report, and also reported on the 35th TRANSSC meeting at which one draft standard had been approved for submission to the CSS. TRANSSC had also approved one draft standard for submission to Member States for comment, and three DPPs. TRANSSC had also cleared two drafts of the Nuclear Security Series.

At the 35th TRANSSC meeting, the conclusions of the working groups on the revision of TS-G-1.4 and TS-G-1.5 had been presented, and the revision of SSG26 (DS496) had been discussed. The creation of TRANSSC Technical Expert Groups (TTEGs) had been endorsed and the enrolment of TTEG membership initiated.

Mr Hinrichsen's presentation is available on the CSS web site.

Mr M. Hirano asked for further clarification on the process for establishing TTEGs, and whether these were permanent groups. Mr Delattre responded that these were not intended to be permanent and would be established in the same way as ad hoc working groups for the Review Committees. Mr Hinrichsen confirmed that this was the case.

Mr Jammal supported the use of remote participation to TRANSSC and asked whether there were lessons that TRANSSC might share with the other Committees in terms of interconnectivity with other transport-related committees and outreach activities. Mr S. Whittingham responded that transport, by definition, was interconnected and that TRANSSC was always keen to communicate with other relevant groups. Mr Whittingham also noted that the emphasis on working in smaller groups at the TRANSSC meetings helped to encourage contributions from Member States.

2.5 Waste Safety Standards Committee (WASSC)

Mr G. Williams, outgoing WASSC Chair, presented the end of term report, and also reported on the 44th WASSC meeting, which had included joint sessions with RASSC. WASSC had approved three draft standards for submission to the CSS, one draft standard for submission to Member States for comment and three DPPs. WASSC had also cleared two drafts of the Nuclear Security Series.

WASSC also discussed the Member States comments on DS468 (revision of WS-G-3.1), and the scope and cosponsorship of this publication. WASSC also discussed DS505 (revision of RS-G-1.8) and DS513 (revision and combination of GS-G-3.1 and GS-G-3.5) and a proposed Safety Guide on

policy and strategy for the safety of radioactive waste and spent fuel management, decommissioning, and environmental remediation.

WASSC had a presentation on the entombment option for decommissioning of NPPs, as well as feedback presentations on the use of the IAEA safety standards from Mexico, Switzerland and Ukraine.

Mr Williams' presentation is available on the CSS web site.

Mr Jammal commented that it was important to ensure that the waste safety guides were non-prescriptive and based on scientific evidence, as well as ensuring that they reflected international best practice rather than individual opinions.

2.6 Information on the meetings of the Nuclear Security Guidance Committee (NSGC)

Mr M. Gregoric, outgoing (acting) Chair of NSGC, presented the end of term report, and also reported on the 12th NSGC meeting at which three draft Nuclear Security Series publications had been approved for submission to DDG-NS for approval for publication. One draft publication had been approved for submission to Member States for comment. One DPP had also been submitted but was not approved and will be resubmitted to NSGC-13. In terms of interface documents, NSGC had cleared four draft standards for submission to the CSS, two draft standards for submission to Member States for comment, and five DPPs.

NSGC had also held discussions on a variety of topics, including: suggestions for the next term of NSGC; the management of safety–security interfaces; and a survey to obtain feedback from Member States on the use of nuclear security guidance.

Mr Gregoric's presentation is available on the CSS web site.

Ms A.-C. Rigail noted that NSGC had identified suitable topics for a joint security and safety approach (e.g. the protection of radioactive materials against sabotage) and asked whether NSGC had suggestions on how to proceed. Mr Gregoric indicated that further work to develop categorization systems for sabotage and for malicious use of radioactive materials was needed first.

Mr Williams noted that interface documents contained just a brief reference to safety–security interfaces, and suggested that DS512 on borehole disposal facilities for radioactive waste might be suitable for a joint safety and security approach. Mr Gregoric suggested that a joint safety and security publication on the storage of spent fuel might be a better option.

2.7 Information on the meeting of the Chairs held on 1 November before the CSS meeting

Mr Delattre reported that the meeting of the Chairs of the Review Committees and of the Commission addressed the following topics:

- Agenda items for the first meeting in the next term of the committees, including induction training on the roles of the Committees, SPESS A and B, the SSC website and NSS-OUI.
- The renewal of the Interface Group (when all new Chairs have been appointed).
- The revised version of SPESS B, including instructions on dealing with comments from observers.
- Proposal to revise the definition of "accident management". The new definition was discussed and approved by the committee chairs, and the Secretariat agreed to adopt the new definition with immediate effect.
- The conclusion from the consultants' meeting on the 2012 UNSCEAR report on the attributability of health effects and inferring risks.

- Harmonization of the presentations to the CSS under Agenda Item 2.
- The approach to joint meetings between Committees (and joint Working Group membership).

3. Approval of draft publications and DPPs

3.1 Draft Safety Guide DS472: Organization, Management and Staffing of the Regulatory Body for Safety

Ms S. Lungu presented the draft Safety Guide and provided an overview of its preparation, as well as the publication's background, including the objectives and scope. Ms Lungu indicated that comments had been received from CSS members from Finland, France and Spain; these comments had been discussed and resolved with each of the individuals.

Ms Lungu's presentation is available on the CSS web site.

Mr Feron confirmed the support of NUSSC for the draft publication.

Mr J. Dies Llovera noted that three comments from Spain had not been accepted, and asked that these be considered in the future revision of the publication. Ms Lungu thanked Mr Dies Llovera for the comments and confirmed that they would be used as part of the feedback for the next revision.

The Commission endorsed the draft for publication.

3.2 Draft Safety Guide DS473: Functions and Processes of the Regulatory Body for Safety

Ms Lungu presented the draft Safety Guide and provided an overview of its preparation, as well as the publication's background, including the objectives and scope. Ms Lungu indicated that comments had been received from CSS members from Finland, Germany and Japan; these comments had been discussed and resolved with each of the individuals.

Ms Lungu's presentation is available on the CSS web site.

Mr Feron confirmed the support of NUSSC for the draft publication, and noted that NUSSC had previously devoted significant attention to the incorporation of comments into the draft.

Mr A. Hart asked whether there were plans to combine DS472 and DS473. Mr Delattre replied that these publications already combined several previous safety guides, but that further combinations would be considered in future. Mr Feron noted that NUSSC had also suggested a future combination of DS472 and DS473, as well as incorporating recommendations on the management system for the regulatory body; however, he suggested that this was not a short-term priority.

Mr Lund noted the challenges in producing DS472 and DS473, and suggested that the resolution of comments from CSS members needed to be presented in more detail in future.

The Commission endorsed the draft for publication.

3.3 Draft Safety Guide DS479: Operating Experience Feedback for Nuclear Installations

Ms T. Bilic Zabric presented the draft Safety Guide and provided an overview of the background, objectives and scope of the publication. Ms Bilic Zabric indicated that comments had been received from CSS members from Germany, the Republic of Korea and Pakistan; all but one of these comments had been accepted, and the comment resolution had been communicated with the relevant Member States representatives.

Ms Bilic Zabric's presentation is available on the CSS web site.

Mr P. Webster confirmed the support of NUSSC for the DPP.

The Commission endorsed the draft for publication.

3.4 Draft DPP Safety Guide DS508: Assessment of the Application of General Requirements for Design of Nuclear Power Plants

Mr J. Yllera presented the draft DPP, including the background, objectives and scope of the proposed new Safety Guide and the justification for the publication. Comments had been provided by the Republic of Korea and these had been addressed

Mr Yllera's presentation is available on the CSS website.

Mr Feron confirmed the support of NUSSC for the DPP, noting the complex development of the DPP, which had required significant input from NUSSC.

The Commission approved the DPP.

3.5 Draft DPP Safety Guide DS509: Revision by amendment of Safety Guides for Research Reactors - NS-G-4.1 to NS-G-4.6, SSG-10 and SSG-37

Mr D. Sears presented the proposed approach to the revision of all 11 Safety Guides for research reactors using 3 draft DPPs (DS509, DS510 and DS511). Mr Sears presented the background and justification for this approach, and explained that DS509 was for the focused revision by amendment of a set of eight related Safety Guides. One comment had been provided by the Republic of Korea, and this had been accepted.

Mr Sear's presentation is available on the CSS web site.

Mr Feron confirmed the support of NUSSC for the DPP.

Mr Jammal asked about the application of the graded approach and how the Safety Guides would address the use of novel technology (i.e. research reactor designs that make the transition to power reactors). Mr G. Rzentkowski confirmed that this DPP was focused on the revision of the existing safety guides for research reactors; however, a separate DPP is being prepared for a Safety Guide that will specifically address the application of the graded approach to such technologies. Mr Larsson also noted the comments about the application of the graded approach and suggested that this should be addressed in a single publication. Mr Rzentkowski confirmed that this was intention in the planned DPP that he had referred to. Mr Sears commented that the graded approach is covered in DS511 (Agenda Item 3.7). Mr Hart asked whether it might be better to address this publication first; Mr Sears responded that the intention was that DS511 would benefit from the development of the Safety Guides under DS509 and DS510.

Mr Larsson and Mr Hart asked whether there were any intentions to merge the Safety Guides. Mr Sears replied that this had been considered but it was concluded that there would be no benefit in doing this. Mr G. Caruso confirmed that there were long-standing discussions on the potential for combining Safety Standards, while also taking account of the needs of customers who want more targeted publications. Mr Feron noted that the use of NSS-OUI placed less emphasis on combining individual publications; however, the links and the consistency between publications remained very important. This was supported by Mr Lund.

Mr Gregoric suggested that it would be possible to combine all the Safety Guides into a single publication, and asked where the decommissioning of research reactors would be addressed. Mr Delattre replied that the decommissioning of research reactors was covered in DS452.

Mr Feron commented that the transition from research reactor to power reactor is understood and that the drafts should ensure that they are consistent with the relevant standards for NPPs. He noted that although NUSSC supported the DPP, in the longer term it would be necessary to establish a common approach that addressed both research reactors and NPPs, based on a thematic approach. This was supported by Mr Larsson.

Ms Rigail suggested that the updates to the Safety Guides should consider the conclusions of the EU Thematic Peer Review on Ageing Management of Research and Power Reactors. Mr Sears agreed to do this.

The Commission approved the DPP.

3.6 Draft DPP Safety Guide DS510: Revision of Safety Guides SSG-20 and SSG-24 for Research Reactors

Mr Sears again briefly presented the proposed approach to the revision of all 11 Safety Guides for research reactors. Mr Sears presented the background and justification for this approach, and explained that DS510 was for the revision of a set of two Safety Guides. Comments had been provided by the Republic of Korea and Japan, and these had all been accepted.

Mr Sear's presentation is available on the CSS web site.

Mr Feron confirmed the support of NUSSC for the DPP.

The Commission approved the DPP.

3.7 Draft DPP Safety Guide DS511: Revision of Safety Guide SSG-22 for Research Reactors

Mr Sears again briefly presented the proposed approach to the revision of all 11 Safety Guides for research reactors. Mr Sears presented the background and justification for this approach, and explained that DS511 was for the complete revision of SSG-22. Comments had been provided by the Republic of Korea and Japan, and these had either been accepted in full, or rejected because of a conflict with previous comments from NUSSC. There were no unresolved comments.

Mr Sear's presentation is available on the CSS web site.

Mr Feron confirmed the support of NUSSC for the DPP.

Ms Rigail noted that it was important to maintain a consistent approach between research reactors and NPPs, especially in respect of design extension conditions.

The Commission approved the DPP.

3.8 Draft DPP Safety Guide DS512: Borehole Disposal Facilities for Radioactive Waste, revision of SSG-1

Mr D. Bennett presented the draft DPP, which was for a revision of Safety Guide SSG-1. Mr Bennett described the justification, objectives and scope of the revision. Comments had been provided by the Republic of Korea and Japan, and these comments had either been accepted in full or with modification.

Mr Bennett's presentation is available on the CSS web site.

Mr Williams confirmed the support of WASSC for the DPP, noting that it was an interface document and that the Commission might like to consider the extent to which the safety–security interface should be addressed in the publication.

Mr Jammal asked whether the disposal facilities covered were regarded as final repositories, and whether specific recommendations on the quantities of low level waste and of hazardous sealed sources would be included in the Safety Guide. Mr Bennet confirmed that borehole disposal facilities were considered a final repository and that it was intended to provide guidance on the phrase "small volumes of LLW". He also indicated that limits on the type and quantity of sealed sources would be determined by the safety case for the individual facility.

Mr Dies Llovera asked whether the title might include reference to low and intermediate level waste, and commented that siting was a very important factor. Mr Bennett replied that the title was intended

to be consistent with the titles of Safety Guides on near surface disposal facilities and on geological disposal facilities, and that siting of borehole facilities would be addressed in an Appendix to DS512.

Mr Markovits asked whether the maximum diameter of borehole would be specified; Mr Bennett replied that the Safety Guide would not be prescriptive on this issue.

Mr Lewis noted that comments to the Review Committees from the United States of America on the contents of the Safety Guide had been rejected, and asked for an assurance that these would be addressed in the drafting. Mr Bennett replied that it was decided not to change the document structure (i.e. to maintain consistency with related Safety Guides); however, each of the suggested topics would indeed be covered in the Safety Guide. A footnote had been added into the draft DPP to ensure that these comments are not overlooked.

Mr Jammal noted that a concern with such disposal facilities was ensuring continued oversight and peer review, and asked whether the Safety Guide would encourage, for example, binding arrangements such as the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Mr Bennett replied that this was not included in other Safety Guides on disposal facilities. Mr Delattre stated that the relevant responsibilities were covered in GSR Part 1 (Rev. 1).

The Commission approved the DPP.

4. DPPs and Draft Nuclear Security Series publications for information

4.1 Draft Implementing Guide NST004: Developing a National Framework for Managing the Response to Nuclear Security Events

Mr I. Barraclough presented the draft Implementing Guide, an interface document, for information. Mr Barraclough outlined the objective, target audience, scope, structure and contents of the draft publication. The next step is to submit the draft to the Deputy Director General (NS) for approval for publication.

Mr Barraclough's presentation is available on the CSS web site.

Mr Markovits asked whether the IAEA IEC was included as part of the international response arrangements. Mr Barraclough replied that, while there would be expected to be an interface with IEC, the Implementing Guide focused on the security response.

Ms Heinrich commented that, although EPReSC was established towards the end of the drafting of this Implementing Guide, there had been good cooperation with NSGC and the Technical Officer. She also noted that, in practice, an integrated security and safety response would be required at the governmental level.

4.2 Draft Implementing Guide NST045: Computer Security for Nuclear Security

Mr. D. Dudenhoeffer presented the draft Implementing Guide, an interface document, for information. Mr Dudenhoeffer presented the background, scope, target audience, structure and key concepts of the draft publication. He also described the safety interface considerations. The next step is to submit the draft to the Deputy Director General (NS) for approval for publication.

Mr Dudenhoeffer's presentation is available on the CSS web site.

Mr T. Eisner expressed support for the publication, which was very timely and relevant, and provided a systematic overview of the issues.

4.3 Draft Implementing Guide NST051: Security during the Lifetime of a Nuclear Facility

Mr. D. Shull presented the draft Implementing Guide, an interface document, for information. Mr Shull presented the background, scope, target audience and structure of the draft publication. The next step is to submit the draft to the Deputy Director General (NS) for approval for publication.

Mr Shull's presentation is available on the CSS web site.

Mr Caruso closed this part of the agenda by informing the CSS that the Coordination Committee was aiming to identify documents outside of the Safety Standards and Nuclear Security Guidance series that could address both safety and security. These would be issued as a new series of publications, referred to as Safety and Security Reports. Suitable topics for such publications included management systems and computer security.

5. Policy discussions

5.1. Results of the consultants' meeting on the consideration of the implications of the 2012 UNSCEAR report "Attributing Health Effects to Ionizing Radiation Exposure and Inferring Risks" for the development of IAEA safety standards.

Mr Caruso provided some opening remarks and reminded the Commission that part of the mandate of the Agency was to establish safety standards in collaboration with the competent organs of the United Nations. Mr Caruso summarized the background in terms of the previous CSS discussions and actions taken in response to the UNSCEAR report, including arranging the consultants' meeting held on 14–16 February 2018.

Ms C. Jones, the Chair of the consultants' meeting, presented a summary of the background to the meeting and some of the key issues in relation to the review of the IAEA Safety Fundamentals, SF-1. Ms Jones described the issues discussed at the meeting, and the conclusions and recommendations arising.

Ms Jones' presentation is available on the CSS website, and the report from the meeting is provided in Annex VI.

Mr Eisner and Mr Hirano queried the phrase "less biased towards nuclear installations" with regard to Principle 8. Ms Jones responded that the aim was to ensure that examples relevant to all types of facility were included. Mr Caruso confirmed that the proposal was not to remove examples that were considered important, but to add to the existing text.

Mr Markovits stated that it was important that the Safety Fundamentals provided clarity in respect of medical exposures, especially with regard to the differences between diagnosis and treatment.

Mr Larsson noted that the review of SF-1 was relevant to discussions currently taking place in the review committees, for example on optimization and on the definition of "risk". He considered that it was the right time to update SF-1, and that the inclusion of additional safety principles, such as stakeholder involvement, should be considered. Ms Jones agreed with this, and noted that the meeting report also suggested that international cooperation, which is one of the Essential Elements in the Nuclear Security Fundamentals NSS No. 20, be considered as an additional principle.

Ms Rigail asked for clarification on the issue with the text on medical exposures in Principle 4. Ms Jones replied that the consultants' meeting considered that existing text appeared to be an afterthought, and that the justification of medical exposures could be better integrated into the text as a whole.

Ms Rigail also raised the question of justification for protective actions in the case of existing exposure or emergency situations. She stresses the fact that the justification should be appreciated in balancing benefits and drawbacks for such actions and that it is commendable, in the case of off-site emergency planning, to reduce those drawbacks by appropriate and in-depth preparation and

planification. She concluded that this new approach for justification, coming from the ICRP 2007, should not be an encouragement for inaction.

Mr Jammal indicated that he would want to consider the report in more detail, but suggested that the CSS had a role in encouraging clarity in the revision process to avoid misuse of the safety standards. He also noted that, in addressing the UNSCEAR report, IAEA had to consider the protection of workers and the public.

Mr Lund commented that the original publication of SF-1 was a major achievement and that any revision needed to be approached with caution. He agreed that SF-1 could be improved, but suggested that this was a lower priority than promoting the implementation of GSR Part 3.

Mr Lewis expressed support for the conclusions of the consultants' meeting: he noted that the issues extended beyond those raised by the UNSCEAR report, and asked whether the proposed Safety Report would be focused solely on the issues raised by the UNSCEAR report. Mr Caruso confirmed that this was the intention. Mr Lewis suggested that a NSGC member should also be invited to participate in the drafting of the Safety Report.

Mr Lewis also suggested that the proposed review of SF-1 should consider the range of preconditions that would need to be met to initiate a revision of the publication.

Mr Feron commented that the impact on the Safety Requirements publications should be considered before taking a decision to revise SF-1. He also queried whether there were differences between the conclusions reached by the consultants' meeting and those previously reached by RASSC. Ms Jones commented that there were small differences, but that there was a broad agreement that an immediate revision of SF-1 was not justified by the UNSCEAR report alone and that the concepts of attribution were important issues for the IAEA to consider when revising its guidance documents.

Mr Hinrichsen agreed that it was important to involve all five safety standards committees, but noted that there was no representative from TRANSSC at the consultants' meeting. Ms. Jones commented that there were several members that attended the consultants' meeting who had experience in transportation issues and that their recommendations were included in the final report.

Mr Hart commented that there were sufficient reasons — other than the UNSCEAR report — to update SF-1, and that the role of the CSS, and the interaction with ICRP, should be considered.

Mr A. Ferapontov commented that SF-1 was not in need of revision, and that any proposals to revise SF-1 should not be based on lower level documents.

Ms Heinrich noted that the issues raised by the UNSCEAR report had already been taken into account in the drafting of DS475, with particular focus on the text related to the use of plain language and the communication of risks in perspective.

Mr Massera agreed that risk communication was the main issue, and commented that the findings of the consultant's meeting were compatible with the conclusions previously reached by RASSC.

Mr Tiipana could not be present for the discussions, but did subsequently provide a contribution by email in which he expressed support for the revision of SF-1, based on all considerations not just the UNSCEAR report. Mr Tiipana did not, however, consider this a priority and suggested that before any such revision, the ICRP plans to provide new or additional guidance on these and/or related matters should first be considered. Mr Tiipana suggested that the main issue was risk communication, and that the need to ensure proper and effective risk communication should be recognized.

Ms Drábová thanked everyone for their contributions to the discussion. From this, she concluded that there were three actions placed on the safety standards committees. One action is from the previous CSS meeting plus two new actions, as follows:

1. The CSS requests the Safety Standard Committees (SSCs) to determine which safety standards currently under development or already published could be strengthened, and for the SSC Chairs to report on progress to the CSS meetings in 2018. [Action 42.03 from the previous CSS meeting: see Annex IV]

2. The CSS recommends 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 Recommendation 2 from the consultants' meeting report (see Annex VI) and specifically to provide practical guidance, including case studies, on:

   - How to apply the concept of retrospective attribution of radiation health effects;
   - The prospective inference of health risks from radiation exposures;
   - The prediction of notional health effects for comparative purposes (e.g. the use of collective dose).

   The committees should identify experts at the June/July SSC and NSGC meetings to participate in the drafting of the Safety Report starting in the 4th Quarter of 2018. **[Annex III, Action 43.03]**

3. The CSS recommends that the SSCs undertake a review of SF-1 at the June/July 2018 meetings and report back at the 44th CSS meeting in November 2018. Depending on the outcome of these reviews, the Secretariat could make arrangements for the development and approval of a draft DPP in 2019 for the revision of SF-1. Work on the revision could then start in 2020. **[Annex III, Action 43.04]**

With regard to the first action above, Mr Williams indicated that WASSC had reviewed the waste-related safety standards, and concluded that DS468 was mostly of relevance.

6. Use of IAEA Safety Standards in Member States

6.1 India

Mr S. A. Bhardwaj provided a presentation (available on the CSS web site) on the use of IAEA Safety Standards in the AERB regulatory programme in India. Mr Bhardwaj summarized the nuclear power programme and other radiation facilities in India, and described the system of regulatory safety standards and the process for the development of these standards. He noted that the system for developing standards had similarities with that employed by IAEA in terms of reviewing and soliciting comments on draft standards. Mr Bhardwaj then summarized the utilization of IAEA safety standards in India, as well as the use of regulatory documents from other countries.

In the discussion that followed, Mr Bhardwaj provided more information on: how standards were implemented for specific technologies; the role played by the Indian TSO; regulatory documents for specific types of facility; irradiation facilities in India; and the plans for the decommissioning of NPPs. He also confirmed that regulatory documents were available in English on the AERB website.

6.2 South Africa

Mr O. Phillips provided a presentation (available on the CSS web site) on the use or adoption of IAEA safety standards by the South African National Nuclear Regulator. Mr Phillips summarized the international obligations and bilateral agreements of South Africa, as well as the regulatory policy and framework. He then described the use of IAEA safety standards and nuclear security guidance publications within this framework. Mr Phillips concluded by providing examples of international cooperation as well as the perspective of the National Nuclear Regulator on the safety standards.

In the discussion that followed, Mr Phillips provided more information on plans for disposal facilities for high level waste, and on the approach taken by the regulatory body in training staff to address both safety and security.

7. Information on the activities of the OECD Nuclear Energy Agency

Mr A. White presented a summary (available on the CSS web site) of recent NEA activities in the areas of safety and regulation, highlighting several items of interest, as follows:

- The NEA's Steering Committee for Nuclear Energy is considering the creation of a new Committee on Decommissioning of Nuclear Installations and Legacy Management.
- The Committee on Nuclear Regulatory Activities established two new working groups:
    - A permanent working group on the safety of advanced reactors;
    - An ad hoc group to serve as a regulatory forum for boiling water reactors.
- The committee will also organize a workshop to share experience on supply chain quality issues.
- The Committee on the Safety of Nuclear Installations agreed to update previous assessments of capabilities and facilities required to support the safety of nuclear installations and provide a report with recommended actions. The committee also considered a proposed joint research project on corium spreading and corium-concrete interaction. The committee also discussed what can be done to support the deployment of Accident Tolerant Fuel.
- The committee has two workshops planned for 2018:
    - Workshop on site-level PSA, July, Munich, Germany.
    - International Severe Accident Management Conference, October, Ottawa, Canada.
- The Radioactive Waste Management Committee has published its extended methodology for presenting national spent fuel and radioactive waste inventories for all types of radioactive waste using a common format.
- The NEA Integration Group for the Safety Case continues to examine the properties and behaviours of sedimentary clay and rock salts in hosting deep geological repositories for long-lived radioactive waste. A new group focussing on crystalline rocks has been formed.
- The first International Radiological Protection School will be held in August 2018 in Stockholm (http://www.oecd-nea.org/rp/irps/).
- The Working Party on Nuclear Emergency Matters will organize a joint workshop in 2020 on emergency preparedness and response in nuclear and non-nuclear fields.

In the discussion that followed, Mr Dies Llovera asked about plans for research on accident tolerant fuel. Mr White replied that the NEA was looking at opportunities for cooperative research on this subject, and noted that there was scope for multiple improvements in fuel.

8. Miscellaneous. Report of the meeting, Date of the next meeting

Mr A. Gromann De Araujo Goes, Mr Jammal, Mr Eisner and Ms M. Žiaková volunteered to provide presentations at the 44th CSS meeting on the use of the IAEA safety standards in Brazil, Canada, Germany and Slovakia, respectively.

Mr Delattre indicated that a draft list of actions resulting from the 43rd CSS meeting would be provided for comment to the CSS members **[Annex III, Action 43.05]** and that the draft report of the 43rd CSS meeting would be posted for comment to the CSS web site **[Annex III, Action 43.06]**. Mr Delattre informed the Commission that all presentations made at the 43rd CSS meeting would be posted on the CSS web site **[Annex III, Action 43.07]**.

Mr Delattre informed the Commission that the dates for the next meeting are in the week **12–16 November 2018.**

ANNEX I

PARTICIPATION AT THE 43rd CSS MEETING

The Commission

A. J. González, Argentina (sent apologies – unable to attend)

C.-M. Larsson, Australia

A. Gromann De Araujo Goes, Brazil

R. Jammal, Canada

Y. Jun, China (sent apologies – unable to attend)

D. Drábová (Chair), Czech Republic

M. R. M. Ezz El-Din, Egypt

P. Tiippana, Finland

A.-C. Rigail, France

T. Elsner, Germany

S. A. Bhardwaj, India

M. Markovits, Israel

M. Sakurada, Japan (sent apologies – unable to attend; represented by M. Hirano)

J. S. Uhm, Republic of Korea

H. Mohd Ali, Malaysia (sent apologies – unable to attend)

M. Z. A. Baig, Pakistan

A. Ferapontov, Russian Federation

M. Žiaková, Slovakia

C. O. Phillips, South Africa

J. Dies Llovera, Spain

I. Lund, Sweden

H. Wanner, Switzerland

A. Hart, United Kingdom

F. Brown, United States of America (sent apologies – unable to attend; represented by R. Lewis)

Observers

L. Vinhas, AdSec (sent apologies – unable to attend)

M. Garribba, EC (sent apologies – unable to attend; represented by M. Hübel)

C. Cousins, ICRP (sent apologies – unable to attend)

R. Meserve, INSAG (sent apologies – unable to attend)

H. Nieh, OECD NEA (sent apologies – unable to attend; represented by Mr A White)

Chairpersons of the Review Committees

EPReSC: A. Heinrich

NSGC: M. Gregoric (Previous, Acting); S. Bayer (New)

NUSSC: F. Feron (Previous); P. Webster (New)

RASSC: G. Massera (Previous); R. Bly (New)

TRANSSC: P. J. Hinrichsen

WASSC: G. Williams (Previous); M. Golshan (New – announced at the meeting (not present))

Representatives and associated experts

S. H. Ahn, M. Aparicio Peña, I. Forest, R. Hemsley, M. Hirano, M. Hübel, K. Iwata, R. Lewis, N. Miyasaka, T. Nakajima, H. Nilsson, H. W. Park, R. Sharafutdinov, I. Spevakova, M. Turner, K. Weidenbrück, A. White, J. Zegri.

IAEA Staff Members

J.-C. Lentijo, Deputy Director General, Department of Nuclear Safety and Security

E. Buglova, Head, Incident and Emergency Centre (IEC)

G. Caruso, Director, Nuclear Safety Office of Coordination (NSOC)

P. Johnston, Director, Division of Radiation, Transport and Waste Safety (NSRW)

R.A.A. Raja Adnan, Director, Division of Nuclear Security (NSNS)

G. Rzentkowski, Director, Division of Nuclear Installation Safety (NSNI)

L. Guo, M. Khaliq, D. Liu, S. Mallick, H. Mansoux, S. Morita, A. Orrell, M. Pinak, S. Purvis, D. Senior, A. Shokr, C. Spitzer, P. Tarren, J. Tierney.

K. Asfaw, I. Barraclough, D. Bennett, T. Bilic Zabric, D. Dudenhoeffer, S. Lungu, D. Sears, P. Shaw, D. Shull, J. Yllera.

Coordinators of review Committees and of the Commission on Safety Standards

R. de la Vega, Incident and Emergency Centre (IEC), EPReSC

M. Svab, Regulatory Activities Section (NSNI), NUSSC

T. Colgan, Radiation Safety and Monitoring Section (NSRW), RASSC

S. Whittingham, Regulatory Infrastructure and Transport Safety Section (NSRW), TRANSSC

S. Geupel, Waste and Environmental Safety Section (NSRW), WASSC

I. Barraclough, Safety Standards and Security Guidance Development Section (NSOC), NSGC

D. Delattre, Scientific Secretary of the CSS, (NSOC) Safety Standards and Security Guidance Development Section

ANNEX II

AGENDA OF THE 43rd MEETING OF THE COMMISSION ON SAFETY STANDARDS: 11–13 April 2018

1. Opening Session

1.1. Opening of the Meeting *DDG J.-C. Lentijo*

1.2. Introductions of new members, Adoption of the agenda, Adoption of the 42nd CSS meeting report

1.3. Administrative arrangements for the meeting, Status on the CSS interests for the 6th term, Status of the endorsed Standards and Response to Actions from the 42nd meeting and to remaining actions from previous meetings

2. End of term reports from the Safety Standards Committees and the Nuclear Security Guidance Committee

2.1. Emergency Preparedness and Response Standards Committee: *A. Heinrich, Chair; R. de La Vega, Scientific Secretary*

2.2. Nuclear Safety Standards Committee: *F. Feron, Chair; M. Svab, Scientific Secretary*

2.3. Radiation Safety Standards Committee: *G. Massera, Chair; T. Colgan, Scientific Secretary*

2.4. Transport Safety Standards Committee: *P. Hinrichsen, Chair; S. Whittingham, Scientific Secretary*

2.5. Waste Safety Standards Committee: *G. Williams, Chair; S. Geupel, Scientific Secretary*

2.6. Information on the meeting of the Nuclear Security Guidance Committee: *M. Gregoric, Chair of the last meeting; I. Barraclough, Scientific Secretary*

2.7. Summary of the meeting of the Chairs held on 10 April 2018 before the CSS meeting

3. Approval of draft publications and DPPs

3.1. Draft Safety Guide DS472 on Organization, Management and Staffing of the Regulatory Body for Safety: *S. Lungu*

3.2. Draft Safety Guide DS473 on Functions and Processes of the Regulatory Body for Safety: *S. Lungu*

3.3. Draft Safety Guide DS479 on Operating Experience Feedback for Nuclear Installations: *T. Bilic Zabric*

3.4. Draft DPP Safety Guide DS508 on Assessment of the Application of General Requirements for Design of Nuclear Power Plants: *J. Yllera*

3.5. Draft DPP Safety Guide DS509 on revision by amendment of Safety Guides for Research Reactors: NS-G-4.1 to NS-G-4.6, SSG-10 and SSG-37: *D. Sears*

3.6. Draft DPP Safety Guide DS510 on revision of Safety Guides for Research Reactors (Cont.): SSG-20 and SSG-24: *D. Sears*

3.7. Draft DPP Safety Guide DS511 on revision of a Safety Guides for Research Reactors (cont.): SSG-22: *D. Sears*

3.8. Draft DPP Safety Guide DS512 on Borehole Disposal Facilities for Radioactive Waste, revision of SSG-1: *D. Bennett*

4. DPPs and draft Nuclear Security Series publications for information

4.1. Draft Implementing Guide NST004 on Developing a National Framework for Managing the Response to Nuclear Security Events: *I. Barraclough*

4.2. Draft Implementing Guide NST045 on Computer Security for Nuclear Security: *D. Dudenhoeffer*

4.3. Draft Implementing Guide NST051 on Security during the Lifetime of a Nuclear Facility: *D. Shull*

5. Policy discussion

5.1. Results of the consultants' meeting on the consideration of the implications of the 2012 UNSCEAR report "Attributing Health Effects to Ionizing Radiation Exposure and Inferring Risks" for the development of IAEA safety standards.

6. Use of IAEA Safety Standards in Member States

6.1 India

6.2 South Africa

7. Information on activities of the OECD/NEA

8. Miscellaneous. Report of the meeting, Dates of the next meeting (week of 12–16 November 2018)

This will also include a call for candidates for making a presentation at the next meeting on the use of safety standards in Member States

ANNEX III

ACTIONS ARISING FROM THE 43rd MEETING OF THE COMMISSION

43.01 The final report of the 42nd CSS meeting to be uploaded on the CSS web page. **[Action: Secretariat, CSS Scientific Secretary]. Done**

43.02 The end of term reports for the safety standards review committees and for NSGC to be uploaded on the CSS web page. **[Action: Secretariat, CSS Scientific Secretary]. Done**

43.03 The CSS recommends 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 Recommendation 2 from the consultants' meeting report (see Annex VI) and specifically to provide practical guidance, including case studies, on:

- How to apply the concept of retrospective attribution of radiation health effects;
- The prospective inference of health risks from radiation exposures;
- The prediction of notional health effects for comparative purposes (e.g. the use of collective dose).

The committees should identify experts at the June/July SSC and NSGC meetings to participate in the drafting of the Safety Report starting in Quarter 4 of 2018. **[Action: SSCs and NSGC, Secretariat]**

43.04 The CSS recommends that the SSCs undertake a review of SF-1 at the June/July 2018 meetings and report back at the 44th CSS meeting in November 2018. Depending on the outcome of these reviews, the Secretariat could make arrangements for the development and approval of a draft DPP in 2019 for the revision of SF-1. Work on the revision could then start in 2020. **[Action: SSCs, Secretariat, CSS Scientific Secretary, CSS]**

43.05 A draft list of actions resulting from the 43rd CSS meeting to be provided to the CSS members for comments. **[Action: Secretariat, CSS Scientific Secretary]. Done (this list).**

43.06 The draft report of the 43rd CSS meeting to be posted for comments. **[Action: Secretariat, CSS Scientific Secretary].**

43.07 The presentations made at the 43rd CSS meeting to be uploaded on the CSS web page. **[Action: Secretariat, CSS Scientific Secretary]. Done.**

ANNEX IV

STATUS OF ACTIONS FROM THE 42nd MEETING OF THE COMMISSION

42.01 The final report of the 42nd CSS meeting to be uploaded on the CSS web page. **[Action: Secretariat, CSS Scientific Secretary]. Done.**

42.02 The CSS endorses the first recommendation of the CSS Working Group on the results of the UNSCEAR report as follows:

That a Consultancy be called to initiate an analysis of the Safety Fundamentals and to identify whether there is a need to refine certain parts of the text with respect to:

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

The results of this Consultancy's analysis should be provided preferably to the 43rd CSS in April 2018 for deliberation and decision on a path forward. The results should be captured in a manner that would provide the background information for any proposed modifications to the Safety Fundamentals and /or any other safety-related publications, to support the Secretariat in, for example, the development of a draft Document Preparation Profile (DPP). **[Action: Secretariat, CSS Scientific Secretary]. Consultancy Meeting 14–16 February 2018 – see Agenda Item 5.1. Done.**

42.03 The CSS endorses the second recommendation of the CSS Working Group on the results of the UNSCEAR report as follows: That the CSS request the Safety Standard Committees (SSC) to determine which safety standards currently under development and already published could be strengthened in this respect and for the SSC Chairs to report on progress to the CSS meetings in 2018. This is not intended to be an extensive exercise. **[Action: Secretariat, Safety Standards Committees]. To be discussed at the June/July meetings of the Committees. Ongoing.**

42.04 An item to discuss issues relating to small modular reactors and transportable reactors to be added to the agenda of the next Meeting of the Chairs. **[Action: Secretariat, CSS Scientific Secretary]. Postponed to next Meeting of the Chairs (November 2018) as not all the new Chairs were present.**

42.05 Discussions to be initiated between the IAEA and the International Organization for Standardization (ISO) TC85 for harmonization of the ISO safety related definitions with the IAEA Safety Glossary. **[Action: Secretariat, CSS Scientific Secretary]. Meeting on 6 April 2018. Done.**

42.06 An updated draft of the CSS mid-term report to be provided to the CSS members for comments, in particular, on recommendations for the second half of the 6th CSS term **[Action: Secretariat, CSS Scientific Secretary, CSS members]. Revised version posted for comments on 27 Nov. 2017. Only positive comments received. Final report posted on 12 January 2018. Done.**

42.07 The Secretariat and the Review Committees to consider proposals made during the CSS meeting for the development of additional guidance on:

- The timeframe for effective and timely regulatory decision making;
- Industrial digital devices of limited functionality, including smart devices.

[Action: Secretariat, Review Committees] To be discussed at the June/July meeting of the Committees. TECDOC in preparation for smart devices. Ongoing.

42.08 A draft list of actions resulting from the 42nd CSS meeting to be provided to the CSS members for comments. **[Action: Secretariat, CSS Scientific Secretary]. Done (this list).**

42.09 The draft report of the 42nd CSS meeting to be posted for comments. **[Action: Secretariat, CSS Scientific Secretary]. Draft report posted on 12 Jan. 2018. No comments received. Done.**

42.10 The presentations made at the 42nd CSS meeting to be uploaded on the CSS web page. **[Action: Secretariat, CSS Scientific Secretary]. Done.**

ANNEX V

SUMMARY OF END OF TERM REPORTS FROM THE SSCs AND NSGC

Each of the safety standards review committees (EPReSC, NUSSC, RASSC, TRANSSC and WASSC) and the Nuclear Security Guidance Committee (NSGC) has prepared an individual end of term report providing a detailed account of their activities.

This note is intended to provide a brief summary of specific initiatives and conclusions that have been noted in the end of term reports, especially where these are common to all (or at least most of) the committees.

A brief summary of the focus, activities and future priorities of each of the individual committees is also provided.

Common initiatives and conclusions

- All the end of term reports noted the value of the "Meeting of the Committee Chairs", held just before the CSS meetings. These meetings were considered to be a useful forum for exchanging information and for encouraging consistency.

- All the committees are continuing to encourage presentations from Member States to provide feedback on the implementation of Safety Standards or the use of, and needs for, Nuclear Security Guidance.

- All the committees establish or have established "ad hoc", mostly temporary, working groups to address specific aspects or technical areas.

- There has been an overall increase in the involvement of external organizations as observers to the committees, and the value of the contributions by these observers to the work of the committees has been noted.

- All the committees undertook a self-assessment exercise, as requested by DDG-NS. The amount of feedback varied between committees, however:

    - The responses were uniformly positive in terms of the committees meeting their Terms of Reference in relation to transparency, consensus, quality, coherence and quality;

    - All committees identified some areas for improvement, including the need for more interaction between different committees and increasing the efficiency of the publication process.

- All the SSCs use (or are planning to use) on-line conferencing as a means of encouraging remote participation in the committee meetings. The potential use of this approach has also been discussed at NSGC.

- All the committees identified a need to enhance the interface between safety and security, and specifically to improve coordination and communication between NSGC and the SSCs, including arranging joint meeting sessions in the next term.

Brief summary of focus, initiatives and plans for the review committees

EPReSC

Focus: Establishing an effective and efficient committee in its first term. Developing Safety Guides to support the implementation of GSR Part 7, and discussing the technical guidance developed by the Incident and Emergency Centre (IEC) through its EPR Series publications.

- **Specific initiatives:**
  - Establishing Operating Guidelines and a roadmap for new EPR safety standards.
  - Establishing temporary Working Groups on:
    - Revision of GS-G- 2.1;
    - Communication in an emergency ("Am I safe?").
  - Joint meeting with WASSC
  - Allowing the possibility for remote participation at meetings using WebEx.
- **Future plans and priorities:**
  - Promote the implementation of EPR Safety Standards
  - Revision of GS-G-2.1 and review of GSG-2, including specific efforts to collect comments from Member States;
  - Reviewing and extending the roadmap for the EPR safety standards standards and identifying priorities for EPR Safety Guides;
  - Increasing the involvement of EPReSC in the development of EPR Series publications;
  - Establishing a Working Group to review EPR Safety Standards in light of the 2012 UNSCEAR report on Attributing Health Effects to Ionizing Radiation Exposure and Inferring Risks.

NUSSC

Focus: Reviewing and updating safety standards to ensure that the lessons learned from the Fukushima Daiichi NPP accident are incorporated, and agreeing priorities for revision of Safety Guides.

- **Specific initiatives:**
  - Establishing temporary Working Groups on:
    - The review of specific draft Standards
    - The long term structure of Safety Guides
    - The review of the draft of GSR Part 2 (joint working group with WASSC).
  - Encouraging inputs from industry organizations
  - Joint meetings with RASSC and WASSC
- **Future plans and priorities:**
  - Consistent set of Safety Standards and Nuclear Security publications, with progress towards a common Glossary
  - Implementing a coordinated revision of Safety Guides, based on a 'fit for purpose' review, including initiatives to update interrelated Safety Guides as a group;
  - Addressing the safety of Small Modular Reactors;
  - Providing guidance on implementing the graded approach;
  - More detailed justification of DPPs and recommendations for existing installations.

RASSC

Focus: Supporting the development of Safety Standards to support the implementation of GSR Part 3, with particular emphasis (jointly with WASSC) on the protection of the environment.

- **Specific initiatives:**
  - Establishing temporary Working Groups (electronic) on:
    - The 2012 UNSCEAR report on Attributing Effects and Inferring Risks;
    - The control of contaminated non-food commodities.
  - Use of Topical Sessions involving presentations from the Secretariat and external experts.
  - Joint meetings with WASSC and NUSSC
- **Future plans and priorities:**
  - Main priorities are:
    - Supporting the implementation of GSR Part 3;
    - Updated guidance on exemption and clearance;
    - Graded approach to regulation;
    - Radionuclides in food and water;
    - Use of radiation sources to expose people for non-medical purposes.

  Additional priorities include: optimizing radiation protection of workers; radon in Homes and workplaces; uncertainties, conservatism and proportionality in assessment and practice; management of existing exposure situations; radiation protection in veterinary medicine and radiation exposure of aircrew and space crew.

TRANSSC

Focus: Revising the Transport Regulations (SSR-6) and supporting advisory material (SSG-26), and reviewing related safety standards.

- **Specific initiatives:**
  - Establishment of ad-hoc Working Groups, including on:
    - Classification, Marking, Labelling, Placarding and Documentation;
    - Package stowage and retention during transport;
    - A1 and A2 values;
    - Criticality;
    - Dual purpose casks.
  - Changes to the format of meetings to improve efficiency and effectiveness of TRANSSC
- **Future plans and priorities:**
  - Periodic review of SSR-6 (Rev. 1);
  - Establishment of TRANSSC Technical Expert Groups on criticality, radiation protection, transport operational matters;
  - Arranging joint meetings with other SSCs and NSGC;
  - Review of TS-G-1.2 in conjunction with EPReSC;
  - Increasing the active participation of Member States at meetings and outreach efforts for Member States that do not currently attend TRANSSC.

WASSC

Focus: Developing Safety Standards to support the implementation of GSR Part 5 (Predisposal Management of Radioactive Waste), GSR Part 6 (Decommissioning of Facilities) and SSR-5 (Disposal of Radioactive Waste).

- **Specific initiatives:**
  - Use of Topical Sessions involving presentations from the Secretariat and external experts;
  - Addressing the need to develop guidance on remediation, clearance, environmental protection, and the management of NORM residues;
  - Joint meetings with RASSC, NUSSC and EPReSC.
- **Future plans and priorities:**
  - Review of GSR Part 5 and full revision of SSG-15.
  - The development of guidance on:
    - Exemption and clearance (jointly with RASSC)
    - Existing exposure situations;
    - Policy and strategy for radioactive waste and spent fuel management, decommissioning, and environmental remediation;
    - Operational safety for geological disposal facilities;
    - Stakeholder involvement in planning disposal;
    - Transition from operation into decommissioning;
    - Determining waste acceptance criteria.
  - Improved interactions with NSGC, including a joint meeting session, and with NE.
  - Seeking increased cosponsorship of waste related publications.

NSGC

Focus: Completion of the set of Implementing Guides, review of the Fundamentals and Requirements publications, and establishing priorities for the issue of Technical Guidance publications.

- **Specific initiatives:**
    - Creation of temporary Working Groups on:
        - Safety–security interfaces;
        - Nuclear security guidance roadmap;
        - Nuclear Security Series Glossary.
    - Revised Terms of Reference.
    - Improvements to the handling of safety–security interfaces.
- **Future plans and priorities:**
    - Further development of supporting guidance to the Implementing Guides;
    - Publication and translation of the Nuclear Security Series Glossary;
    - Improving the handling of safety–security interfaces, especially in areas where safety measures and security measures are strongly interdependent;
    - Arranging joint meeting sessions with safety standards committees;
    - Consider the issue of ‘non-consensus’ publications outside the Nuclear Security Series;
    - Greater efforts to encourage, collect and analyse feedback on the use of Nuclear Security Series publications;
    - Monitoring timeframes for development of publications;
    - More interaction with AdSec.

ANNEX VI

Report of the Consultancy Meeting to consider the Implications of the 2012 UNSCEAR report on "Attributing Health Effects to Ionizing Radiation Exposure and Inferring Risks" for the development of Safety Standards
14-16 February 2018

SUMMARY AND RECOMMENDATIONS TO THE CSS

This Consultancy Meeting (CM) was directed by the CSS to initiate an analysis of the Safety Fundamentals (SF-1) and to identify whether there is a need to refine certain parts of the text with respect to:

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

The CM performed a detailed review of SF-1 and analysed both the structural composition and issues relating to the individual principles. The CM developed a number of specific proposals for modifications, which are set out in further detail in the Annex.

The CM concluded that, currently, SF-1 does not address the distinction between retrospective attribution of health effects and prospective inference of risks. SF-1 gives equal weighting[2] to radiation effects that are attributable and to effects that are not explicitly attributable, but for which under some assumptions their prospective occurrence might be inferable. The consequences of the current approach can be significant. For instance, the justification of an emergency intervention, such as evacuation, in situations involving low radiation doses which may involve harm to those affected, has used a notional radiation detriment that is not attributable.

RECOMMENDATIONS

1. The CM concluded that the UNSCEAR report can provide good insights into a future revision of SF-1

2. Based on its review of SF-1, the CM recommends that a Safety Report be prepared (drafted by experts from each of the five Safety Standards Committees) to address the concepts listed in the attached annex in order to provide practical guidance, including case studies, on how to apply concepts of retrospective attribution of radiation health effects, of prospective inference of health risks from radiation exposures and of prediction of notional health effects for comparative purposes (e.g., use of collective dose).

3. The CM further recommends that SF-1 be reviewed to take into account the significant issues raised in this meeting, as listed above, and to make it coherent and consistent with GSR Part 3 and GSR Part 7, with ICRP recommendations and with the findings of the UNSCEAR 2012 report.

[2] ICRP 64

ANNEX: Detailed Recommendations Based on the Review of SF-1

BACKGROUND

This Consultancy Meeting (CM) was directed by the CSS to initiate an analysis of the Safety Fundamentals (SF-1) and to identify whether there is a need to refine certain parts of the text with respect to:

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

Currently, SF-1 does not address the distinction between retrospective attribution of health effects and prospective inference of risks. SF-1 gives equal weighting to radiation effects that are attributable and to effects that are not explicitly attributable, but for which under some assumptions the likelihood of their prospective occurrence might be inferable. The consequences of the current approach can be significant. For instance, in situations involving low radiation doses the justification of an emergency intervention, such as evacuation, which may involve harm to those affected, has used a notional radiation detriment that is not attributable.

The Secretariat provided an overview of the current development progress of the Safety Standards Series, noting that due to many other factors besides the work of UNSCEAR (e.g., publication of GSR Part 3 and 7, Safety Guide GSG-2, and DS474 and DS475 currently being finalized), the time to embark on the formal review of SF-1 is fast approaching. The timing for revision of SF-1 would need to be considered carefully in order to maintain the 'top-down' approach to the development of standards.

REVIEW OF THE SAFETY FUNDAMENTALS

Except for the principles for responsibility for safety, role of government, leadership and management for safety, all the principles may be affected by considerations of objective attribution of effects versus subjective inference of risks. The CM performed an analysis of SF-1 and identified the following needs to refine the text:

General Recommendations:

- In general, SF-1 should be revised to be less biased toward nuclear installations, to include medical and other uses of radiation, and protective actions taken to reduce risk, which would also include clarification to footnote 3 on page 3.
- The concept of potential exposure should be clearly articulated and connected with UNSCEAR's analysis so that attributable health effects have an absolute priority in actions taken for protection of individuals.
- SF-1 should clarify that the Linear No Threshold (LNT) is a model used for radiation protection purposes (prospective inference of risk) and it should not be misused for retrospective attribution of health effects.
- SF-1 should clarify that major epidemiological estimates of radiation health effects rely on situations involving relatively high doses and dose rates that change over time, while in reality the majority of conditions, even in an emergency, involve relatively low doses, and relatively low and mainly constant dose rates[3]. The UNSCEAR report notes that there are limitations in knowledge for attributing health effects to these low dose situations.

[3] Annex A of UNSCEAR 2012 and ¶ 25 of A/67/46 (UNSCEAR report to the 59th session of the UNGA).

- SF-1 should clarify that great care needs to be taken when using collective dose (multiplying very low doses for large populations).
- The scope of SF-1 should be clarified for its applicability in situations involving very low doses.
- The term 'radiation risks' as defined in footnote 2 on page 1, does not adequately reflect the established understanding of this term. As noted later in principle 6, the inconsistency of the use of the word 'risk' in the Safety Fundamentals must be resolved. In this context, the Safety Glossary should be revised with more appropriate descriptions of risk (see ICRP 60, Annex C and INSAG-9) as well as other relevant terms including attributability (see the UNSCEAR 2012 Glossary).
- Paragraph 1.6 of SF-1 should be amended clarifying the respective roles of UNSCEAR and ICRP with regard to estimation of retrospective attribution of health effects and the prospective inference of risk.
- As a structural issue, principles 4, 5, 6, and 8 apply currently for planned exposure situations (facilities and activities); as the CM recommends that these be expanded to cover all exposure situations, then the content of principles 9 and 10 would need to be revised.

Principle 4: Justification of facilities and activities

- This principle should be expanded to all exposure situations where actions need to be justified, in particular in order to include the justification of actions aimed at reducing radiation risk (i.e. in existing and emergency exposure situations).
- A paragraph should be added suggesting that greater consideration be given to radiation risks associated with doses for which health effects are attributable, rather than to those involving lower doses from which risks can only be inferred.
- The text should be generalized in such a way that an explicit discussion of medical exposure would not be needed in this principle.
- An additional paragraph should be included to clarify that collective dose (multiplying very low doses for large populations) should not be used in decisions on justification.

Principle 5: Optimization of protection

- Optimization means selection of the best option under the prevailing circumstances.
- This principle should be expanded to all exposure situations, rather than just planned exposure situations, in particular in order to include the optimization of protective actions aimed at reducing radiation risk (i.e. in existing and emergency exposure situations).
- A paragraph should be added suggesting that greater consideration (weighting[4]) be given to prospective scenarios for which health effects could be attributable, than to scenarios involving lower doses from which risks can only be inferred.
- Text should be added indicating that careful consideration be given where doses are already low, to ensure, once actions have been justified, that protection is properly optimized (do more good than harm).
- Text should be added indicating that committed exposure over time needs to be properly considered.

[4] ICRP 64.

Principle 6: Limitation of risks to individuals

- This principle should be expanded to all exposure situations, not only planned exposure situations, in particular when different values for dose restrictions are used in different exposure situations.
- Limitation of risks is provided through various regulatory restrictions (e.g., dose limits, reference levels, constraints, criteria). Accordingly, this principle should be clarified that regulatory restrictions are not necessarily based on the attributability of health effects.
- The inconsistency of the use of the word 'risk' in this principle vis à vis the definition of 'radiation risks' in footnote 1 on page 1 should be addressed.
- The concept of 'risk limits' being presented as a legal upper bound of acceptability should be removed, as this term is not used in actual practice or regulations.
- Paragraph 3.26 of this principle (on optimization) should be placed in principle 5 and reworded accordingly.
- Text should be added linking principle 6 to principle 8 (in relation to probability of occurrence).

Principle 7: Protection of present and future generations

- Text should be added indicating that the doses to be incurred by populations located far away from the origin of the exposure, either in distance or in time, are expected to be low, namely in the range of doses for which radiation effects are not explicitly attributable.
- The term 'uncertainties' might be misinterpreted; rather it should be replaced by 'limitation of knowledge.'
- Include a provision for dealing with potential exposure, such as those related to probabilistic safety/risk assessments and the safety case for waste disposal facilities.
- Footnote 8 is misplaced: as indicated in the CM's general recommendations, the concepts in this footnote are extremely important and should be incorporated in Section 1 of SF-1.

Principle 8: Prevention of accidents

- This principle should be redrafted to be less biased toward nuclear installations, to include medical and other uses of radiation.
- This principle should take into account the difference between doses for which the effects are *attributable* and those for which they are only *inferable*, throughout the lifetime of the facility.[5]
- Potential exposure (such as in probabilistic safety/risk assessments) as it relates to inference of risk should be addressed.
- This principle should indicate the different types of probabilities: those based on actual frequencies of occurrence and those based on subjective degree of belief.

Principle 9: Emergency preparedness and response

- This principle should be revised so that careful consideration be given where doses are below generic criteria to ensure that justified protective actions are properly optimized (do more good than harm and are the best option under the prevailing circumstances).[6]

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[5] For example, in PSA, if the probability of a dose of 200 mSv is 200 times less than the probability of a dose of 1 mSv, then mathematically they would be treated the same; however in light of the UNSCEAR report, the higher dose should be given greater consideration (weighting).

- The principles of justification, optimization and limitation (restriction) of individual doses should be applied for exposures during normal and emergency operations; if principles 4, 5 and 6 are properly amended, some parts of principle 9 could be removed.
- Communication with the public (and engaging with stakeholders) should be emphasized in this principle.

Principle 10: Protective actions to reduce existing or unregulated radiation risks

- Of all the principles, the UNSCEAR report would provide the greatest clarification in this principle, because it covers the entire range of possible doses.
- If principles 4, 5 and 6 are properly amended, some parts of principle 10 could be removed.
- A paragraph should be added suggesting that greater consideration be given to radiation risks associated with doses for which health effects are attributable, rather than to those involving lower doses from which risks can only be inferred.

OTHER SF-1 ISSUES FOR THE CSS TO CONSIDER

The CM identified several other areas for further consideration, in addition to those within the scope of the CM, for example:

- Some of the principles are expressed as requirements or mechanisms rather than fundamental principles.
- Principle 3 covers two main areas: leadership and management for safety, but then includes text for safety assessment.
- Principle 6 discusses the limitation concept that covers dose limits and risk limits but has different implications in different exposure situations leading to difficult communication issues.
- Principle 7 covers a number of different areas and in particular, ‘protection of the environment’ needs to be further updated.
- “International Cooperation and Assistance” is listed as one of the essential elements in the Nuclear Security Fundamentals (NSS No. 20), which may be considered as a new safety principle.

The Secretariat noted that several Safety Requirements finalized after the issuance of SF-1 are more accurate in their approach to addressing important concepts. These revised documents could be used to inform the review of the corresponding principles in SF-1.

The Secretariat also indicated that it is continuing to investigate the conditions that would need to be met in order to consider the preparation of a joint Safety and Security Fundamentals publication in the future.

[6] see GSR Part 7, Appendix II, para. II.1