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Document Preparation Profile (DPP)
Version 1.3 dated 20 February 2025

1. IDENTIFICATION

Document Category or batch of publications to be revised in a concomitant manner

Safety Requirements

Working ID: **DS558**

Proposed Title: **Preparedness and Response for a Nuclear or Radiological Emergency, GSR Part 7 (Rev. 1)**

Proposed Action: **Revision of a publication**

Preparedness and Response for a Nuclear or Radiological Emergency, GSR Part 7, 2015

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

Technical Officer(s): F. Stephani (NS-IEC)

2. BACKGROUND

IAEA Safety Standards Series No. GSR Part 7, Preparedness and Response for a Nuclear or Radiological Emergency, was published in 2015 with the objective to establish, on the basis of IAEA Safety Standards Series No. SF-1, requirements for emergency preparedness and response (EPR) to nuclear or radiological emergencies. It sets out the objectives, criteria and requirements for the protection of human health and the environment in the event of such an emergency.

GSR Part 7 superseded the IAEA Safety Standards Series No. GS-R-2 that had been published in 2002. Since the publication of GSR Part 7 in 2015, feedback has been gathered and lessons have been learned from disruptive situations that might affect the safety of nuclear facilities (e.g. the Covid-19 pandemic) and new or innovative nuclear technologies have been deployed or are likely to be deployed in the coming years. Lastly, since the publication of GSR Part 7, the Emergency Preparedness and Response Standards Committee (EPReSC) has been established to provide the Secretariat with views and advice specific to the development or revision of Safety Standards in the area of EPR.

The feedback analysis report is attached as Annex 2 to this DPP.

3. JUSTIFICATION FOR THE PRODUCTION OF THE PUBLICATION

GSR Part 7 was published almost 10 years ago, which constitutes the typical "standard lifespan" of a Safety Standards Series publication. The first mention of a potential revision of GSR Part 7 was made at the 15th meeting of EPReSC (EPReSC-15) in November 2022 when EPReSC discussed its medium-term plan for the

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time period mid-2023 – end of 2027. A brief summary of the successive decisions made by EPReSC in this regard is as follows:

- At EPReSC-15 (November 2022), EPReSC approved planning for the revision of GSR Part 7.
- At EPReSC-16 (June 2023), EPReSC approved the establishment of 3 Working Groups (WGs) to conduct a feedback analysis of the three main parts of GSR Part 7 (i.e. general requirements, functional requirements, and requirements for infrastructure) to inform the nature, scope and magnitude of this revision.
- At EPReSC-17 (December 2023), these 3 WGs reported on their findings and proposals to EPReSC, which have been recorded as objective and solid technical justifications for the revision. The 3 presentations are available online in the EPReSC-17 web folder:
    - https://nucleus.iaea.org/sites/committees/EPReSC%20Documents/E5.1ReviewGSRPart7-WG1Outputs.pdf
    - https://nucleus.iaea.org/sites/committees/EPReSC%20Documents/E5.2ReviewGSRPart7-WG2Outputs.pdf
    - https://nucleus.iaea.org/sites/committees/EPReSC%20Documents/E5.3ReviewGSRPart7-WG3Outputs.pdf
- In January 2024, a 5-day consultancy meeting was conducted by NS-IEC to perform another independent review of GSR Part 7 to inform its revision. Four experts from four Member States with different levels of EPR experience in the nuclear industry and in the use and management of radioactive material, including radioactive sources, participated in the consultancy meeting. They were all non-EPReSC members, so that they could bring views external to EPReSC and possibly confirm, balance or challenge findings and proposals made by the 3 EPReSC WGs at EPReSC-17. All four participants agreed with the conclusion reached by EPReSC, i.e. various aspects of GSR Part 7 can be updated, clarified or simplified to bring clarity and comprehensiveness.
- At EPReSC-18 (June 2024), EPReSC approved the establishment of a new WG to process the reviews by the former 3 EPReSC WGs and the consultancy meeting, and to make proposal(s) in terms of scope and magnitude of the revision.
- At EPReSC-19 (November 2024), the WG reported on the extensive work it had conducted and explained the reasoning for proposing a large-scope revision of, and a new structure for, GSR Part 7. The discussion that followed led to the approval of the proposal by EPReSC.

In terms of added value expected, this revision will enhance the overall clarity of the content and "user-friendliness" by implementing the following proposals made by the EPReSC WGs:

- Significantly decrease the number of repetitions and cross-references in the document,
- Shorten requirements (schematically, a requirement should be one or two pages long),
- Implement a new structure for a simpler navigation through the content.

In terms of the audience, findings from the analysis highlighted that the current version of GSR Part 7 is mainly regulator oriented. However, other organizations have key roles to play in the preparedness phase and/or the response phase, such as national civil protection services and national disaster recovery agencies (these two examples are absent in GSR Part 7). In addition to explicitly expanding the audience of GSR Part 7, the revised

publication will also include a table that will provide a visual to highlight requirements of primary interest for specific stakeholders, likely in an Appendix.

In terms of additional topics, the revision of GSR Part 7 will introduce concepts based on, or feedback from, past events (without naming these events), for instance:

- The prognosis of how an emergency might develop, which was introduced in the IAEA's response mandate in the 2011 Nuclear Safety Action Plan,
- Disruptive health emergencies such as pandemics,
- Crises under national laws of exception (such as a martial law), which might modify or decrease the oversight on nuclear facilities by the national regulator and, consequently, modify roles and responsibilities in a nuclear or radiological emergency.

Lastly, the graded approach currently elaborated in GSR Part 7 needs to be refined to better fit and avoid any misunderstandings for the future deployment of small modular reactors and microreactors, generation IV nuclear power plants (NPPs), and fusion power plants to ensure an adequate level of EPR arrangements for these new or innovative reactor technologies, accounting for their respective levels of safety.

4. OBJECTIVE

The objective of the proposed publication is to revise the existing, and establish new, EPR requirements for the protection of workers, emergency workers and helpers, the public, and the environment in the event of a nuclear or radiological emergency, regardless of the triggering event.

As the proposed publication is a revision of an existing publication, it will update the requirements as necessary and add any new requirements, as appropriate, taking into account the new challenges identified and the experience gained over the last ten years, as well as the insights from the thorough review and feedback analysis summarized in section 3 of this DPP.

The publication is intended for use by governments, regulatory bodies, and operating organizations, but also other off-site organizations that facilitate the implementation of protective actions and other response actions at the local, regional and national levels, such as first responders, national civil protection services and national disaster recovery agencies.

5. SCOPE

The publication will establish safety requirements that apply to all nuclear fuel cycle facilities and activities, as well as the use and transport of radioactive material and radioactive waste. It will cover the three major phases, i.e. the emergency preparedness phase, the emergency response phase, and the transition phase (to either a planned or existing exposure situation).

Regarding nuclear reactors, the associated requirements will apply to all industrial (e.g. electricity production, cogeneration, desalination) and research applications, and all deployment scenarios (ranging from remote areas far from off-site emergency response capabilities to urban areas with high density of populations).

Regarding activities involving the use or transport of radioactive material and radioactive waste, the current content in GSR Part 7 will be expanded, including to introduce an emergency classification system.

Requirements dealing with radioactive waste that is generated in an emergency and the management of non-radiological consequences will remain and be refined.

Lastly, it should be noted that it is not expected for this new publication to introduce new, or modify existing, suggested numerical values used for radiation protection in an emergency (reference levels and generic criteria). In that sense, consistency with numerical values provided in GSR Part 3 will be maintained.

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

The proposed publication will interface at least with the following IAEA safety standards, nuclear security series, and related international conventions (this is not, and cannot be, regarded as an exhaustive list):

- EUROPEAN ATOMIC ENERGY COMMUNITY, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANIZATION, INTERNATIONAL MARITIME ORGANIZATION, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS ENVIRONMENT PROGRAMME, WORLD HEALTH ORGANIZATION, Fundamental Safety Principles, IAEA Safety Standards Series No. SF-1, IAEA, Vienna (2006).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Governmental, Legal and Regulatory Framework for Safety, IAEA Safety Standards Series No. GSR Part 1 (Rev. 1), IAEA, Vienna (2016).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Leadership and Management for Safety, IAEA Safety Standards Series No. GSR Part 2, IAEA, Vienna (2016).
- EUROPEAN COMMISSION, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANIZATION, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS ENVIRONMENT PROGRAMME, WORLD HEALTH ORGANIZATION, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Safety Assessment for Facilities and Activities, IAEA Safety Standards Series No. GSR Part 4 (Rev. 1), IAEA, Vienna (2016).
- DS548, Predisposal Management of Radioactive Waste, revision of GSR Part 5
- INTERNATIONAL ATOMIC ENERGY AGENCY, Decommissioning of Facilities, IAEA Safety Standards Series No. GSR Part 6, IAEA, Vienna (2014).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Preparedness and Response for a Nuclear or Radiological Emergency Involving the Transport of Radioactive Material, IAEA Safety Standards Series No. SSG-65, IAEA, Vienna (2022).
- DS504, Arrangements for Preparedness for a Nuclear or Radiological Emergency, revision of GS-G-2.1.
- DS527, Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency, revision of GSG-2.
- DS534, Protection Strategy for a Nuclear or Radiological Emergency (new publication in preparation).

- INTERNATIONAL ATOMIC ENERGY AGENCY, Objective and Essential Elements of a State's Nuclear Security Regime, IAEA Nuclear Security Series No. 20, IAEA, Vienna (2013).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5), IAEA Nuclear Security Series No. 13, IAEA, Vienna (2011) (currently under revision).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Security Recommendations on Radioactive Material and Associated Facilities, IAEA Nuclear Security Series No. 14, IAEA, Vienna (2011) (currently under revision).
- EUROPEAN POLICE OFFICE, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL CIVIL AVIATION ORGANIZATION, INTERNATIONAL CRIMINAL POLICE ORGANIZATION–INTERPOL, UNITED NATIONS INTERREGIONAL CRIME AND JUSTICE RESEARCH INSTITUTE, UNITED NATIONS OFFICE ON DRUGS AND CRIME, WORLD CUSTOMS ORGANIZATION, Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control, IAEA Nuclear Security Series No. 15, IAEA, Vienna (2011) (currently under revision).
- Convention on Early Notification of a Nuclear Accident, INFCIRC/335, IAEA, Vienna (1986).
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, INFCIRC/336, IAEA, Vienna (1986).

As applicable, sections in NSNI, NSRW and NSNS will be consulted on particular aspects during the drafting of this publication.

7. OVERVIEW

The tentative table of contents given below for the proposed publication is aligned with the conclusion reported by the EPReSC WG at EPReSC-19 and later agreed by the EPReSC:

1. INTRODUCTION
   - 1.1 Background
   - 1.2 Objective
   - 1.3 Scope
   - 1.4 Structure
2. EMERGENCY PREPAREDNESS
   - 2.1 Planning basis
   - 2.2 Protection strategy
   - 2.3 Emergency planning
   - 2.4 Verification
3. EMERGENCY RESPONSE
   - 3.1 Emergency assessment
   - 3.2 Notification and communication

3.3 Decision-making and implementation of protective actions

3.4 Decision-making and implementation of other response actions

4. TRANSITION

4.1 Transition to a planned or an existing exposure situation

4.2 Termination of a nuclear or radiological emergency

5. APPENDIX: APPLICABILITY OF THE REQUIREMENTS TO DIFFERENT TYPES OF ORGANIZATIONS

The following organizations are current co-sponsors of GSR Part 7 and are expected to renew their co-sponsorship for the proposed publication: FAO, ICAO, ILO, IMO, INTERPOL, OECD/NEA, PAHO, CTBTO, OCHA, WHO, WMO.

The following organizations might additionally be contacted to become co-sponsors of the proposed publication: UNDRR, UNEP, UNOOSA.

Potential co-sponsors will be contacted shortly after the approval of the DPP (as per Step 4 in the SPESS B process). Organizations that will confirm their interest in co-sponsoring the proposed publication will be invited to send experts in the consultancy meetings and technical meeting that will be held as part of the drafting process.

8. PRODUCTION SCHEDULE

Provisional schedule for preparation of the publication:

STEP 1: Preparing a DPP	DONE
STEP 2: Internal review of the DPP (Approval by the Coordination Committee)	Q1 2025
STEP 3: Review of the DPP by the review Committee(s) (Approval by review Committee(s))	Q2 2025
STEP 4: Review of the DPP by the CSS (approval by CSS) or information of the CSS on the DPP	Q4 2025
STEP 5: Preparing the draft publication	Q1 2026
STEP 6: First internal review of the draft publication (Approval by the Coordination Committee)	Q2 2027
STEP 7: First review of the draft publication by the review Committee(s) (Approval for submission to Member States for comments)	Q4 2027
STEP 8: Soliciting comments by Member States	Q1 2028
STEP 9: Addressing comments by Member States	Q3 2028
STEP 10: Second internal review of the draft publication (Approval by the Coordination Committee)	Q4 2028
STEP 11: Second review of the draft publication by the review Committee(s) (Approval of the draft)	Q2 2029
STEP 12: (For Safety Standards) Editing of the draft publication in MTCD and endorsement of the draft publication by the CSS (For nuclear security guidance) DDG's decision on whether additional consultation is needed, establishment by the Publications Committee and editing	Q4 2029
STEP 13: Approval by the Board of Governors (for SF and SR only)	Q1 2030
STEP 14: Target publication date	Q2 2030

9. RESOURCES

Estimated resources involved by the Secretariat (person-weeks) and the Member States (number and type of meetings):

- For the IAEA Secretariat:
    - For NS-IEC: 25 person-weeks for drafting.
    - Additionally, colleagues in NSNI, NSRW and NSNS might be consulted as applicable, and Safety Standards Specialists in NSOC will be involved.
- For Member States:
    - 4 one-week consultancy meetings with participation of up to 4 experts, i.e. 16 person-weeks.
    - 1 Technical Meeting with participation by experts from 50 Member States.

10. ANNEXES

10.1 Annex 1: Presentation given at the 57th meeting of the Radiation Safety Standards Committee

RASSC-57 took place 9-13 December 2024 and followed EPReSC-19 where EPReSC agreed on moving forward with kicking off the formal process to revise GSR Part 7, based on a large-scope revision and new structure. As RASSC was the Committee that led the development of GSR Part 7 (EPReSC was formally established the month that followed the publication of GSR Part 7), a presentation was given at RASSC-57 to inform RASSC on the overall 1.5 year review process that EPReSC had just followed to inform the revision of GSR Part 7. The presentation covered the work by the 3 EPReSC WGs that initiated the thorough review of GSR Part 7, followed by the consultancy meeting that was conducted in early 2024, and the EPReSC WG that was tasked to investigate revision scenarios and make final proposal(s) to EPReSC. This presentation is available in the RASSC-57 web folder:

https://nucleus.iaea.org/sites/committees/RASSC%20Documents/R.4.5_GSR%20Part%207%20review%20to%20inform%20revision%20-%20Summary%20Dec.%202024.pdf

10.2 Annex 2: Findings of the EPReSC WG on the proposed scope and revision of GSR Part 7

Objectives of Working Group

The WG was established at EPReSC-18 to explore the scope of the revision of GSR Part 7, taking into account the suggestions that had been made by the WGs that undertook the GSR 7 feedback analysis, established at EPReSC-16, and the consultancy meeting following EPReSC-17. The WG identified three potential options for undertaking the revision, which were then evaluated. This note summarizes the main findings of the WG's review and its recommendation to EPReSC-19 on the way forward.

Options for Revision of GSR Part 7

The first meeting of the WG derived three options:

1. Revision by amendment.
2. Substantial revision retaining current structure.
3. Substantial revision and restructuring.

Overview

The WG examined option 1 and determined that it did not offer sufficient flexibility to address the comments that had been raised by the three feedback analysis WGs and consultancy meeting. There was a general consensus that the scope of changes that could be made using revision by amendment are very limited. Any changes to the structure, such as the removal, reordering or addition of requirements would not be possible by revision by amendment. Neither would any potentially contentious changes to existing requirements.
The WG therefore paused consideration of option 1 and proceeded to evaluate options 2 and 3. It established two sub-working groups, with WG members allocated to each group which then explored its own allocated option. The sub-working groups completed their assessments and the full WG reconvened on 3 October 2024 to present the proposed approaches for options 2 and 3. Both groups considered how changes identified in the feedback analysis and consultancy could potentially fit into the option 2 and option 3 structures, as well as opportunities to reduce repetition and increase usability. It should be noted that neither group sought to propose new text for the individual requirements as this will be undertaken during the drafting stage. However, they sought to develop options that will facilitate future amendments.

Common Findings for Both Options 2 and 3

A. The existing three-part structure of GSR Part 7 (General Requirements/Functional Requirements/Requirements on Infrastructure) should be removed as it is unhelpful for navigating the document.
B. Paragraphs should be renumbered so that they relate to each requirement (e.g. the third paragraph of requirement 8 becomes 8.3) in order to aid navigation/referencing by users.
C. An explanatory statement should be added to each requirement outlining what the purpose and desired outcomes are of the requirement.
D. Where possible, responsibilities for implementing each requirement should be specifically allocated to a role/authority (e.g. operating organization). Whilst the requirements should retain flexibility so they can be adapted to each Member State's framework, there are many examples of responsibilities in the current paragraphs that could be allocated to a specific authority to help ensure clarity.
E. A table cross-referencing roles against requirements should be introduced to increase user friendliness.
F. The future revision should clearly delineate what is a requirement, and what is explanatory text. The current format of GSR formats could cause confusion, with bold, numbered requirements and non-bold requirements aligned with paragraph numbers. GSR Part 3 (Para 1.48) defines these as 'overarching' and 'associated' requirements, so they are all requirements (i.e. 'shall' statements) and have equal importance in the standards, but this may not be apparent to all stakeholders. Furthermore, there are paragraphs that are simply explanatory text but appear in the same format as the requirements. The Sub-Working Groups have aligned with this approach so as retain consistency with the format of GSRs, but we recommend that IAEA revisit the templates to improve clarity. It would also be useful to avoid the use of multiple 'shall' statements in the same paragraph so that users can easily identify each requirement.

Proposal for Option 2 - Substantial revision retaining current structure

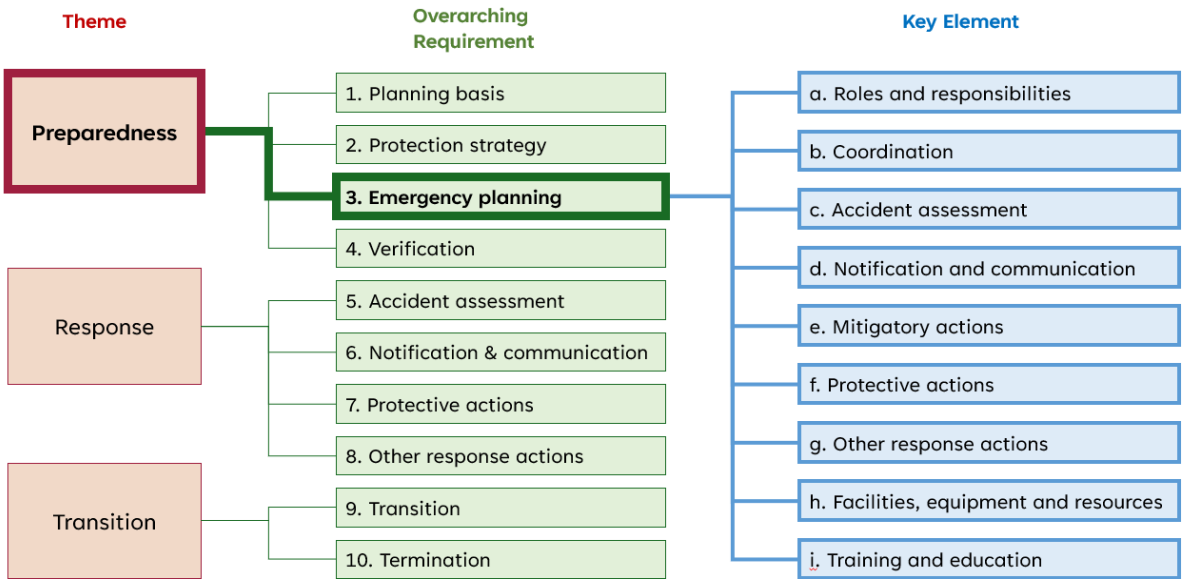
The scope of the option was mainly limited to retaining the current structure of requirements (i.e. Requirements 1 through 26) and assessing how they could be revised to address updates and gaps identified by the previous working groups, and which requirements were similar in nature and potentially redundant.
The sub-WG undertook a review of each existing requirement in order to determine whether it could be removed or merged with another, similar, requirement. It concluded that there is potential for the following requirements to be removed:

- Requirement 1. The emergency management system. *Implementation of all of the requirements will lead to the development of an EMS, but it is has little value as its own requirement and the term is practically absent for the remainder of GSR Part 7. This concept should be introduced in the introductory text of the document, rather than as a requirement.*
- Requirement 3. Responsibilities of international organizations in emergency preparedness and response. *It is not within the authority of Member States to implement, so it is not appropriate as a requirement in its current form.*

The sub-WG also suggested the potential to merge requirements where they are closely related, for instance requirements 2 and 20, and 10 and 13. This approach has not been explored further because the sub-WG considered that it could constitute restructuring and so be within the remit of Option 3.

Proposal for Option 3 - Substantial revision and restructuring

The three-part existing structure of the publication should be reorganized so that the requirements are related to the three emergency phases within the remit of GSR Part 7: Preparedness, Response and Transition. The sub-WG considered that these are a better reflection of emergency preparedness and response priorities in practice. The ten overarching requirements have been aligned under these phases. Supporting each requirement are 'key elements', or topics which the requirement is intended to address and which are themselves associated requirements. This approach allows users to quickly identify which requirements relate to the topic they are interested in. The example structure for a requirement relating to emergency planning is provided below.



The sub-WG satisfied itself that all existing paragraphs (associated requirements), in addition to the GSR Part 7 suggestions from the previous WGs and consultancy meeting, could be mapped across into this structure. This is important for assuring Member States that their arrangements for aligning with the existing requirements could be easily used to demonstrate alignment with the requirements in this new structure.

Discussion

A meeting of the full WG took place on 3 October 2024 to discuss the outcomes of the sub-working groups. Participants agreed that the main advantage to Option 2 was that it would probably be less disruptive to implement than Option 3 for those countries whose EPR arrangements are closely aligned to the existing structure of GSR Part 7. It would also be better aligned with existing arrangements for assessing countries' alignment with GSR Part 7, including the EPR Information Management System (EPRIMS) and the Emergency Preparedness Review (EPREV) service. However, the group concluded that these factors could easily be mitigated using a simple matrix to 'map' the requirements in the existing GSR Part 7 to those in the new structure.
Overall, the participants unanimously concluded that Option 3 was the preferred option because it offered the greatest flexibility to address the areas for improvement raised by earlier WGs and, importantly, it would greatly improve the user-friendliness of the publication. It was also agreed that the topic-focused structure of Option 3 would also allow the greatest scope for it to adapt and evolve with developments in EPR, and could provide a foundation for developing the framework of Safety Guides and EPR Series reports that support implementation of GSR Part 7.

Recommendation to EPReSC-19

The revision of GSR Part 7 should progress in accordance with Option 3 (Substantial revision and restructuring).

Proposed Structure for Option 3 Approach

THEME	Preparedness				Response				Transition	
REQUIREMENT (Overarching Requirement)	1) Planning basis	2) Protection strategy	3) Emergency planning	4) Verification	5) Accident assessment	6) Notification and communication	7) Decision-making and implementation of protective actions	8) Decision-making and implementation of other response actions	9) Transition to a planned or an existing exposure situation	10) Termination of a nuclear or a radiological emergency
KEY ELEMENT (Associated Requirement)	A. Legislation B. Emergency management system C. Hazard assessment D. Emergency Preparedness Categories E. Emergency Planning Zones F. Release characteristics G. Offsite considerations	A. Reference levels B. Guidance values C. Predetermination of protective actions D. Generic criteria E. Emergency classification system	A. Roles and responsibilities B. Coordination C. Accident assessment (incl. emergency classification, A&P, and monitoring & radiological assessment) D. Notification and communication E. Mitigatory actions F. Protective actions G. Other response actions H. Facilities, equipment and resources I. Training (incl. drill) and education	A. Review of planning basis and a protection strategy B. Review and approval of an emergency plan C. Inspection programme (incl. site inspection, exercise conduct & evaluation, etc)	A. Emergency classification B. Assessment and prognosis C. Monitoring & radiological assessment	A. Notification of an emergency B. Activation of response organizations C. Communication among response organizations D. Public communication and information (as part of protective action implementation)	A. Mitigatory actions B. Urgent protective actions C. Early protective actions	A. Medical support B. MHPSS C. Public information (as part of non-radiological hazard management)	A. Remediation (i.e. simple dose reduction activities, not thorough decontamination/cleanup) B. Waste management (activities required before disposal) C. Medical support and MHPSS D. Compensation E. International trade	A. Prerequisites

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