**DPP Draft Safety Guide DS552**
**"Safety Evaluation of Nuclear Installations for External Events Excluding Earthquakes"**
**(Draft dated 1 June 2023)**

| COMMENTS BY REVIEWER | | | | RESOLUTION | | | |
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| Reviewer: **M Ashfaq** Pages: 1<br>Country/Organization: **PNRA Pakistan** Date: 09-08-2023 | | | | | | | |
| Comment No. | Para/Line No. | Proposed new text | Reason | Accepted | Accepted, but modified as follows | Rejected | Reason for modification/rejection |
| 1. | 5 scope | Please add:<br>**The safety assessment of nuclear installation shall be kept up to date throughout the life cycle.** | The safety assessment is kept up-to-date at all stages due to input from any new hazards and evolving situation during life time of installation as part of periodic safety review. | | Safety guides provide guidance and cannot prescribe rules. We cannot mandate "shall" clauses.<br><br>Propose adding:<br>"*The safety guide will address the need for maintenance of the safety assessment of the nuclear installation throughout its life cycles. Re-evaluation of the safety assessment may be triggered by new information, advanced methodologies, or regulatory requirements*.<br>" To the scope. | | |
| 2. | | | | | | | |
| 3. | | | | | | | |

Relevanz: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

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| 4. | | | | | | | |

Relevanz: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

**DS552: Safety Evaluation of Nuclear Installations for External Events Excluding Earthquakes**

| | COMMENTS BY REVIEWER<br>Reviewer: WASSC Members<br>Page.... of....<br>Country/Organization: All Received Comments<br>Date: | | | | RESOLUTION | | | |
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| Sr. No. | Country | Para/Line No. | Proposed new text | Reason | Accepted | Accepted, but modified as follows | Rejected | Reason for modification/ rejection |
| 1. | BDG | | An example of past external events may be included | | | | X | Examples of past external events experienced at nuclear installation sites in some Member States have been included in IAEA new TECDOC "Evaluation of Design Robustness of Nuclear Installations Against External Hazards". The preprint version of the TECDOC will be available during November, 2023. |

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| 2. | BDG | | Lesson learned from past external event may be included | | | | X | Please see response in comment#1 above. |
| 3. | BDG | | Consideration of adaptability due to climate changes may be included | | | | X | As per Section 3 of DPP for DS552 climate change effects are already included. |
| 4. | Republic of Korea | p.2 / 16 | o The following is suggested.<br><br>(before) The use of a graded approach the safety evaluation of reactor design~~~<br><br>(after) The use of a graded approach to the safety evaluation of reactor design~~~ | | X | | | This line has already been deleted. |
| 5. | Republic of Korea | p.2 / 23 | o The following is suggested.<br><br>(before) safety | | | X<br>The objective of this safety guide is to provide | | Most of the general Requirements of GSR Part 4 are |

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| | | | requirements of SSR-1 (e.g., ~~~), SSR 2/1, SSR-3 and SSR-4 ~~~.<br><br>(after) safety requirements of GSR Part 4 (e.g., requirements 1, 8 and 12) ~~~ SSR-1, SSR 2/1, SSR 2/2 (e.g., requirements 6, 18) ~~~ | | | recommendations on how to comply with the applicable safety requirements of GSR Part (Rev. 1), SSR-1 (e.g., Requirements 7, 17-24), SSR 2/1 (Rev. 1), (e.g. Requirements 10, 17, 19 & 20), SSR-2/2 (e.g. Requirements 6 and 8), SSR-3 (e.g. Requirements 5, 18-20 & 22) and SSR-4 (e.g. Requirement 5, 16, 20 & 21), | | applicable. Examples of only few Requirements may provide confusion. |
| 6. | Republic of Korea | p.2 / 33 | o The following is suggested.<br><br>(before) This safety | | | X<br>This safety guide will address external | | |

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| | | | guide will address external events in the safety evaluation of nuclear installations for those external events outlined in IAEA SS No. SSG-68 ~~~<br><br>(after) This safety guide will address external events in the safety evaluation of nuclear installations taking consideration of all operational and accidental conditions for all of those external events outlined in IAEA SS No. SSG-68 ~~~ | | | events in the safety evaluation of nuclear installations taking into account all operational and accidental conditions for those external events outlined in IAEA Safety Standards Series No. SSG-68. | | |

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| COMMENTS BY REVIEWER<br>Country/Organization: FRANCE Date:<br>pages | | | | RESOLUTION | | | |
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| 1. | General | The scope of this guidance document is too wide with insufficient justification for its development:<br>• The potential future guidance document will present:<br>  ○ whether too general recommendations to be applicable to any hazards (flooding from groundwater is off totally different nature compared to aircraft crash) and installations<br>  ○ whether too detailed ones not relevant for a general guidance and highly tricky during the MS or NUSSC consultation regarding the expected quality of IAEA documents<br>• the IAEA strategy regarding development of standards regarding hazards should be clarified and needs of documents should be prioritized. Within this context, a more targeted scope could be discussed.<br><br>The following comments 3 to 6 support this general comment.<br><br>Note that even if developing a guidance document on site evaluation aspects with a similar scope may be easier, IAEA does not propose such an approach and DS 541 has a targeted scope. | | | | X | This comment does not propose a modification to the text but instead suggests that the document DPP does not provide sufficient justification for its development. We intend to provide generic guidance for adaption or modification by members states that identifies key elements that are present in both probabilistic and deterministic safety assessments. Specific methodologies and requirements will not be presented. Separate guidance will be provided for each external hazard in SG-68 will be addressed. We believe that the safety guide will address gaps in our existing safety standards as identified in the related Gap analysis (see Annex). DS541 is specific to hydrologic and meteorological hazards and is an update to SSG-18. This safety guide (DS 552) is new. |

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| 2. | §2 - p2 | …nuclear installations other than nuclear power plants ~~and advanced reactors with passive and inherent design safety features in relation to external hazards excluding earthquakes will be addressed~~ | "advanced reactors" is not an undisputable expression with a definition in IAEA glossary<br>"inherent safety design feature" have to be implemented in any NPP (see SSR-2/1 4.1, 4.11…) among other features.<br><br>The use of these expression is misleading and could be interpreted as not applicable to "NPP", thus the use is not consistent with IAEA requirement | | | X | The entire paragraph has been deleted in response to another member states comment. See revised text |

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| 3. | §3.2 | The justification for the production of the publication is to be clarified<br>~~The recommendations currently provided in the IAEA safety standards relating to the safety evaluation of nuclear installations apply mainly to seismic safety. A safety guide which provides recommendations for meeting the requirements promulgated in safety standards for external events other than earthquakes is therefore needed. This new safety guide will provide recommendations on the safety evaluation of nuclear installations in relation to external events such as high wind and tornadoes, flooding, extreme temperatures, volcanic activity, and human induced external events.~~<br>To be complemented: The need for such a safety guide has also been communicated to the External Events Safety Section (EESS) by both donor and recipient Member States at Technical Meetings and in consultancies. This safety guide will complement existing safety standards on external events. It will also present methods for the use of a graded approach which may be applicable to nuclear installations other than power plants. The use of a graded approach the safety evaluation of reactor designs with advanced safety features will also be addressed.<br>~~Additionally, the impact of climate change on meteorological and hydrological hazards has been the subject of much interest among the scientific community and the public at large. This publication will incorporate lessons learned on this evolving topic for consideration in the safety evaluation.~~ | The fact that there are documents related to earthquake has no link with the need of the current document: there may be a need for seismic hazard and no need for other hazard (requirements could be sufficient and could sufficiently reflect the common practices)<br><br>Please provide available reference document with detailed expectations<br><br>The fact that climate change is of interest of scientific community has no link with the need of the current document | X (3) | These are really three comments. See column 4 for comment 1.<br><br>Comment 3: Suggest text revision to read: "Additionally, this safety guide will provide guidance which can be used to address the impact of climate change on meteorological and hydrological hazards" | X(1)<br>X(2) | Comment 1: The intent is to point out that there is sufficient documentation to address seismic risk (an external hazards), but little guidance on other external hazards. This gap adds justification fo the production of the publication and is needed<br><br>Comment 2. Reference is not needed. Some of this material was communicated to EESS staff in face to face meetings (personal communication). |

**Kommentiert [SM1]:** Comment 1

**Kommentiert [SM2]:** Comment 2

**Kommentiert [SM3]:** Comment 3

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| 4. | §5 (and 2) | Please complement these chapters with clarification on:<br>• The position of the document among other IAEA guidance related to hazards<br>• The requirements that are to be considered for this guidance | The organization of hazards guidance is less and less readable:<br>• On-going DS541 refers to the same requirement. It is highly probable that does not aim at covering SSR-1/req 7, at fully covering SSR-2/1 req 10/17… for external events other than earthquakes<br>• SSG 89 is mentioned as being complemented by the current guidance for external events other that earthquake. Nevertheless, SSG 89 does not aim at a very specific evaluation not equivalent to what is expected in the safety case (see SSG 89 objective)<br>• Clear scope regarding SSG-68, SSG-77, DS541 (SSG-18)… is to be clarified to avoid overlap or non-consistency | X | additional clarification has been added to note how this SSG is complementary to those referenced. Effort will be taken during the production of the SG to clarify where new guidance is introduced. We will not duplicate guidance already contained elsewhere. | | |
| 5. | Annex | Please justify the link between the number of events and the need of a guidance | There are some events that are far more numerous (considering that the less serious they are, the more numerous) without any guidance | X | Added the text "Although the number of events is not directly correlated to the risk, it does suggest that the events are frequent and some guidance on treatment of those events is needed. | | |

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| 6. | Annex – p6 | There may be ~~is~~ also a gap in guidance on the consideration of levels of natural hazards more severe than those considered for design, derived from the hazard evaluation for the site ~~assessment of the safety margin for beyond design basis events other than earthquakes,~~… | The guidance may be not feasible on this topic considering that the practices are very different among MS<br>IAEA requirement only mention this kind of level for natural hazards<br>Please use wording consistent with IEAE requirement ("beyond design basis external event" has been replace by expressions close to DEC in some MS (sur as France) | X | Suggest: "There may be a gap in guidance on the evaluation of plant response to events more severe than those considered for design, derived from the site-specific hazard assessment." | | |
| 7. | | | | | | | |
| 8. | | | | | | | |
| 9. | | | | | | | |

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| Sr. No. | Country | Para/Line No. | Proposed new text | Reason | Accepted | Accepted, but modified as follows | Rejected | Reason for modification/rejection |
| 1. | Belgium | Chapter 5 "Scope" | Better explain how the SSG is complementary to SSG-68 | Can one better explain in which way, or for which aspects, the new SSG would be complementary to SSG-68 ? Will the new SSG develop more detailed methodologies, in comparison to the general approaches described in SSG-68 ? | | X<br>Added text to section "This safety guide is complementary to SSG-68. SSG-is focused on design of installations for externa events, whereas this new safety guide will focus on safety assessments and not design. | | The IAEA SSG-68 provides guidance and recommendation on design of new nuclear installations and re-evaluation of existing nuclear installation in relation to external hazards excluding earthquakes. Where DS552 is intended to cover guidance and recommendation on safety evaluation of nuclear installations using probabilistic and/or deterministic approaches to verify that safety margins are sufficient above design basis external events. |
| 2. | Belgium | Chapter 5 "Scope" | We suggest to emphasize in "5. Scope" of the DPP that this new SSG will give guidance for both | In the "ANNEX – Gap Analysis Report", focus is put twice on the missing guidance for beyond design basis events (BDBE = DEC). However, we | | | X | Guidance to determine design basis and beyond design basis for external events other than earthquake is provided in SSG-68. |

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| | | | DBE and BDBE. | suppose that this new SSG will give guidance for both DBE and BDBE and suggest to emphasize this in "5. Scope" of the DPP. Note that guidance on DBE and BDBE is also given to some extent in SSG-68, which is mentioned in "5. Scope".<br><br>We expect that the guidance for DBE and BDBE (explaining the differences in approach) will be developed in both chapters 7 and 8 of the new SSG. | | | | The DS552 will provide guidance on safety evaluation using probabilistic and/or deterministic methodologies.<br>This safety guide will not make distinctions between DBE and BDBE, but will characterize the external hazards in terms of a "hazard". The methodology will be applicable to all natural phenomena and human induced phenomena. We don't think the distinction is needed. |
| 3. | Belgium | Chapter 7 "Overview" | Better explain the contents of "9. Use of External Events Safety Evaluation results for Nuclear installations" | The scope and content of this chapter 9 is unclear. What kind of "Use" is aimed at ? Is it not part of the "Safety Evaluation" itself and thus described in chapters 7 and 8 ? | Section 9 is intended to provide guidance on how to use safety evaluation results, such as post- event actions, risk-informed decision making, | | | |

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| | | | | | design of modification in case of existing installations and changes in procedures etc. Text has been added to try and clarify the scope and content. | | | |
| 4. | Czech Republic | Proposed Title, 2-7, Annex | In the proposed DPP, a need for a guide for safety evaluation of "external events" as well as for "external hazards" is defined. The latest one, "external hazards" should be used systematically. | We propose using "external hazards". See Safety Glossary 2022 - "hazard", and "hazard assessment". | | | X | Please note that 'event' and 'hazard' are two different terminologies. Both these terminologies are defined in the IAEA Safety and Security Glossary. Please see example to differentiate between source, event and hazard: A chemical process site that presumed to exist around a nuclear installation represents a source. This source is capable of one or more events (e.g. a facility failure causing an explosion and releasing stored |

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| | | | | | | | | process gas), and each event might create one or more hazardous conditions (e.g. explosion pressure wave, release of toxic gas). |
| 5. | Czech Republic | Proposed Title, 2-7, Annex | Instead of "evaluation" use "assessment". | We propose using "hazard assessment". See Safety Glossary 2022 - when looking for "safety analysis" as one of examples of "analysis", we can find information that "*safety assessment should be used as a documented process for the evaluation of safety — for example, evaluation of the magnitude of hazards, evaluation of the performance of safety measures and judgement of their adequacy, or quantification of the* | | | X | No, safety evaluation is a broad term covering collection of data, investigations needed and assessment of safety etc. |

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| | | | | *overall radiological impact or safety of a facility or activity*." If the intention of the new safety guide is to perform such assessment of hazards, then using "hazard assessment" could improve the understandability of the guide.<br>Term "hazard assessment" is used in WENRA SRL, Issue TU and SV, too. | | | | |
| 6. | Czech Republic | 7. OVERVIEW | We recommend to include to the document:<br><br>- terms and definitions that can be explained in detail, such as "event", "hazard", "risk" for harmonizing the meanings; | - disagreements arise between experts of different institutions and orientations in the use of terms such as hazard, risk, threat etc.<br><br>- for various phenomena, the | | X<br>IAEA Safety and Security Glossary, 2022 provides definitions of various terms used in the IAEA Safety Standards.<br>However, any term not covered in the glossary could be defined in the safety standard. | | |

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| | | | - explanatory information (calculation methods) determining the values of the probability of exceeding the occurrence of an external phenomenon for different return periods (100, 10,000 years) based on mathematical statistics and probability: probability of exceeding = 1 – e^(time/return period);<br><br>- explain in detail the deterministic and probabilistic approach in the assessment of external hazards; | requirement of evaluation over a period of 10,000 years appears in many publications. Nowhere it is explained how this time was determined and how the evaluation is done.<br><br>- a disagreements arise between experts of different institutions and orientations in the use of deterministic and probabilistic approach;<br><br>the draft content does not include the combination of hazards | | These are good comments and will be discussed by the working group in drafts of the publication. | | |

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| | | | - include consideration of hazard combinations | | | | | |
| 7. | BMUV, Germany | Page 2<br>Line 9 | … This new safety guide will provide recommendations on the safety evaluation of nuclear installations, SMRs inclusive, in relation to external events such as high wind and tornadoes, flooding, extreme temperatures, volcanic activity, and human induced external events as well as combinations of external events and hazards. | 1. According to DPP advanced reactors with passive and inherent design safety features will be considered in this Safety Guide. Do you intent to consider SMRs as well? If yes, please include.<br>2. As combinations of external events / hazards are subject of this Draft (see Scope), please include in this part of text as well. | | X<br>1. Nuclear installations include nuclear power plants and research reactors etc. Advanced reactors / SMRs are covered in definition of nuclear installation.<br>2. Added as : … human induced external events as well as combinations of external events hazards | | |

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| 8. | BMUV, Germany | Page 2, Line 22 | The objective of this safety guide is to provide recommendations on how to comply with the applicable safety requirements of SSR-1 (e.g., Requirements 7, 17 - 24), SSR 2/1 (Rev. 1), (e.g., Requirements 10 & 17), SSR-3 (e.g., Requirements 5, 18, 20 & 22) and SSR-4 (e.g., Requirements 16, 20 & 21), regarding the safety evaluation of nuclear installations for external events excluding earthquakes. | Although the list of Requirements here is exemplary, we would like to suggest to complement it to make the text more user friendly. | X | | | |
| 9. | BMUV, | | Page 4 | ..... | | | X | We are not really sure |

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| | Germany | | **Overview**<br>*4. Identification of Site-Specific External Event Hazards*<br>*5. Screening of External Event Hazards*<br>*6. Data Collection and Investigations*<br>..... | | | | | what the commenter is suggesting. |
| 10. | BMUV, Germany | | Page 4<br>**Overview**<br>…. | 7. Evaluation of External Events Safety for Nuclear Power Plants, SMRs and Reactor Designs with Advanced Safety Features<br>8. Evaluation of External Events Safety for Nuclear Installations other than Nuclear Power plants using Graded Approach<br>9. Use of External Events Safety Evaluation Results for Nuclear Installations of all Kinds | | X<br>….<br>7. Evaluation of External Events Safety for Nuclear Power Plants<br>8. Evaluation of External Events Safety for Nuclear Installations other than Nuclear Power plants using Graded Approach<br>9. Use of External Events Safety Evaluation Results for Nuclear Installations. | | SMRs and Reactor Designs with Advanced Safety Features (Gen IV) could not be included in the DS552. For more details please refer to comment # 26 by USA. |
| 11. | Japan | General | 1. Safety evaluation methods for external events differ from | | | | X | Please note that safety assessment for external events other |

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| | | | each event and each stage (siting, design, and operation.) Some existing guides have summarized the methods, and some are under revision. When starting the development of this DPP, the scope of this guide and its relationship to other guides within the document structure should be clarified. Table 1 is an example of analysis made by Japan NUSCC team based on the ANNEX in SSG-35, summarizing the relevant guides and allocation of each phase for each external event.<br><br>2. Such clarification described above will enable us to minimize the experts to develop DS552, reduce the burden on participants, and develop user | | | | | than earthquakes is not covered in existing IAEA safety guides.<br>Recommendations provided in safety guides such as SSG-79, SSG-18 and SSG-21 will be helpful for developing especially Section 6: Data Collection and Investigations for DS552. The relevant recommendations from these safety guides will be quoted and referred in the Section 6 of the DS552. Also please note that DS541 is not intended to cover safety assessment for external flooding.<br>The Table 1 will be shared to the experts involving development of the DS552 and it will be ensured that no repetition of work is |

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| | | | friendly guides.<br>3. Related areas of DS552 can be categorized into (a) volcanoes, (b) meteorology and hydrology, and (c) human-induced external events and others. Table 2 summarizes the coverage of each guides for each major stage and each classification. For (a) and (b), the current guides (SSG-21, 18, respectively) already have evaluation chapters, and the data collection and evaluation methods are also described in detail. Regarding (b), the current guidelines are being revised as DS541, so it can be excluded from DS552 by further enhancing the content of DS541. | | | | | done. |
| 12. | Japan | 4. | The objective of this safety guide is to | Related requirements should be included. | | X<br>Modified as: | | |

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| | | OBJECTIVE<br>Line 1 | provide recommendations on how to comply with the applicable safety requirements of ~~SSR-1 (e.g., Requirements 7),~~ SSR-2/1 (Rev. 1)~~,~~(e.g., Requirements 10~~ &~~ 17, 19 & 20), SSR-3 (e.g., Requirements 5, ~~18~~19, 20 & 22) and SSR-4 (5, 16, 20 & 21), as well as some Requirements of SSR-1. | | | The objective of this safety guide is to provide recommendations on how to comply with the applicable safety requirements of SSR-1 (e.g., Requirements 7, 17-24), SSR 2/1 (Rev. 1), (e.g. Requirements 10, 17, 19 & 20), SSR-3 (e.g. Requirements 5, 18-20 & 22) and SSR-4 (e.g. Requirement 5, 16, 20 & 21), | | |
| 13. | UAE | 5. SCOPE | General comment. DS552 seems to have numerous interfaces with recently issued IAEA documents, such as SSG-67 (issued 2021), SSG-89, and safety report series No 103 (issued 2020). Should the associated documents be updated, if necessary? | To insure the consistency of IAEA's guidelines. | | | X | Please note that SSG-67, SSG-89 and SR-103 are covering seismic hazard design and safety assessment. Whereas DS522 is intended to provide recommendations and guidance on safety evaluation for external hazards other earthquake. No subsequent updating |

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| | | | | | | | | of SSG-67, SSG-89 and SR-103 has been foreseen due to development of DS522 because of different scope to be covered in the DS552. |
| 14. | UAE | 5. SCOPE | Suggest to include sand and dust storms as external events | Reason, in the UAE dust and sand storms are recognized as site specific hazards | | | X | As described in Section 5 of the DPP for DS552 that external events in the safety evaluation of nuclear installations for those external events outlined in IAEA SSG-68 will be addressed.<br>As dust storms and sandstorms are covered in the SSG-68, therefore these are already in included in scope of DS552. |
| 15. | USA | General comment | Consider including a summary of SSR-1 Requirement 23: Evaluation of other natural hazards states | To make for a more comprehensive list of external hazards | | X<br>Good comment. Section 4 of the DPP modified to include SSR-1 | | |

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| | | | "Other natural phenomena that are specific to the region and which have the potential to affect the safety of the nuclear installation shall be investigated". This is further elaborated in SSR-1 Par 5.32: "Other natural external hazards, such as wild fires, drought, hail, frazil ice formation, diversion of a river, debris avalanche and biological hazards (e.g., jellyfish, small animals and barnacles) shall be identified and assessed so that the site specific design parameters for these hazards can be derived." | | | Requirement 23 as: The objective of this safety guide is to provide recommendations on how to comply with the applicable safety requirements of SSR-1 (e.g., Requirements 7, 17-24),… | | |
| 16. | USA | Section 2 (Background), Paragraph 3 | Move this text to the Scope section. | This text describes the scope of the new guide. | X – agreed editorial change made as suggested. | | | |
| 17. | USA | Section 2 (Background), | Move the summary | Gap analysis provides justification for the | X agreed editorial change | | | |

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| | | Paragraph 4 (Gap Analysis) | discussion of gap analysis to the Justification section | developing new guide. | made as suggested. | | | |
| 18. | USA | Section 9 (Production Schedule) | The production schedule appears to need updating, starting with STEP 5. | STEP 4 date is April 2024. But then STEP 5 date is Q4 2023. STEP 6-12 may also need to be adjusted. | X – made some changes to the proposed schedule. Note that is a tentative schedule. We will agree on a updated schedule as part of the working group kickoff. | | | |
| 19. | USA | Page 1; proposed title | The new publication is titled as a "Safety Evaluation;" however, a brief discussion on what a "Safety Evaluation" is and what it's supposed to accomplish is missing. | Would be easier to review this document knowing IAEA's definition of safety evaluation. A quasi-definition is provided on the 1st page, 2nd paragraph, "This new publication will provide recommendations on methodologies for the safety assessment…" | | X<br>No specific definition of 'safety evaluation' is provided in IAEA Safety and Security Glossary, 2022. However, definition of this phrase will be provided in appropriate section of DS552. | | |
| 20. | USA | Page 1; 2nd paragraph | Change "The safety assessment of intentional malevolent acts is not covered in | Based on the text in this document, a safety evaluation is not the same as a safety | | X<br>Recommendations on the conduct of safety assessments | | |

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| | | | the proposed publication," to "Recommendations on the conduct of a safety assessment of malevolent acts will not be made in the proposed publication." | assessment. Delete "international" since it's very probable that domestic or national malevolent acts are also not covered. | | which address of malevolent acts will not be provided in the proposed publication. | | |
| 21. | USA | Page 2; last line | "…, accidental human-induced external events, …" | Add 'accidental' to differentiate from 'malevolent.' | X- editorial. OK | | X | . |
| 22. | USA | Page 1; proposed title.<br><br>Page 4; Section 7; 4th and 5th bullet | "External Events" is in the title; however, "external hazard" is used in the proposed safety guide contents in the 'Overview' section. | Based on the text in this document, event and hazard have the same meaning but are used interchangeably throughout the document. Choose one of the two terms (or hazardous event) and use consistently. | | X<br>Checked and few changes made in Section 7 of the DPP. | | |
| 23. | USA | Page 2; first line | Comment on "In addition, the use of a graded approach to safety evaluation of nuclear installations … will be addressed." | It is unclear if the graded approach is in addition to another, original approach or not. If it is in addition, the two proposed approaches should be discussed and compared | | | X | No, 'in addition refers to other aspects mentioned before in this para (safety assessment, lessons learned). |

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| 24. | USA | Page 2; 2nd paragraph in Section 3 | "The use of a graded approach **in** the safety evaluation of reactor designs with advanced safety features will also be addressed." | A word (e.g., a preposition) is missing in this sentence. | | X<br>This sentence has been deleted. | | |
| 25. | USA | Page 1; last paragraph, Section 2 | This publication will appropriately reflect ~~incorporate~~ lessons learned based on ~~industry~~ applied practices following the Great East Japan Earthquake and Tsunami of 2011 and the subsequent Fukushima Daichi accident. | Edits proposed because the guide should not be limited to industry practices, but inclusive of TSO and regulatory practices to reevaluate external hazards, facility impacts, and protective/mitigative strategies adopted. | X made changes as suggested. | . | | . |
| 26. | USA | Page 1 last line and page 2 first paragraph section 2. | "In addition, the use of a graded approach to safety evaluation of nuclear installations other than nuclear power plants ~~and~~ | Including advanced reactors (innovative designs/GenIV) is in conflict with IAEA recently stated strategy under the Nuclear Harmonization and Standardization Initiative (NHSI). Other | X | | | |

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| | | | ~~advanced reactors with passive and inherent design safety features~~ in relation to external hazards excluding earthquakes will be addressed." | than the existing approved DPPs for safety guides development (e.g., DS537), SSGs development would not be pursued in the near future, rather TECDOCs would be used to address gaps (except for a possible new guide on licensing). In addition, it is simply an overly complex scope to include such designs in this DPP at this time. However, development of DS-552 should be technology inclusive to the extent practicable. | | | | |
| 27. | USA | Page 2, Section 3 | ~~The use of a graded approach the safety evaluation of reactor designs with advanced safety features will also be addressed~~. | Major comment: See previous comment above regarding NHSI and scope. | X | | | |
| 28. | USA | Page 2, Section 3 | ~~Additionally, the impact of climate change on~~ | The topics of climate change and impacts on meteorological and hydrological hazards is the subject of another | | | X | Please note that impact of climate change meteorological and |

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| | | | ~~meteorological and hydrological hazards has been the subject of much interest among the scientific community and the public at large. This publication will incorporate lessons learned on this evolving topic for consideration in the safety evaluation.~~ | DPP recently approved by NUSSC. Either delete the statement in this guide or reflect the other ongoing effort and properly scope the work in DS-552. | | | | hydrological hazards will be covered in DS541 (revision of SSG-18).<br>SSG-552 will not cover hazards evaluation part.<br>Rather this safety guide will impact of climate change on safety evaluation of nuclear installation.<br>As this is a safety guide, guidance on incorporation of the impacts of climate change will be made at a high and broad level. Cross reference to more relevant guidance will be made as appropriate. |
| 29. | USA | Page 2, Section 5 | Clarify this statement on the interrelationship between the DPP-DS552 and SSG - 68…. "This safety guide will address external events in the | The scope section should be clarified what will be addressed in the DPP versus the scope of SSG-68 to avoid duplicative scope/work. | | X – a similar comment was made by Belgium (See Comment 1). Text has been modified. | | |

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| | | | safety evaluation of nuclear installations for those external events outlined in IAEA Safety Standards Series No. SSG-68, Design of Nuclear Installations Against External Events Excluding Earthquakes." | | | | | |
| 30. | WNA | 2 | The external hazards include seismic, meteorological, external flooding ~~hydrological~~ lightning, electromagnetic interference, external fire and volcanic hazards, and human induced | lightning , electromagnetic interference and external fire should be added. Consideration of tsunami seems also to be adressed. I propose to add also external flooding rather than hydrological. | | | X | Only main categories of external hazards (seismic, hydrological, meteorological, volcanic and human induced) are mentioned in 'Background'. Flooding is covered under hydrological hazards along with storm surges, waves, seiches etc. While electromagnetic interference and |

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| | | | events. | | | | | external fire are covered under hazards associated with human induced events and lightening is covered in meteorological hazards. There is no need to go in further details in this Sections. However, as mentioned in scope of DS552 all of these hazards are included for safety evaluation. |
| 31. | WNA | 2. | This new publication will provide recommendations on methodologies for the safety assessment of external hazards ~~events~~ … | Proposition to use systematically external hazard rather than external event. General LOOP is an external event but not classified in the external hazard. The question of addressing the LOOP in the Guideline is open ? | | | X | Here we talking about at event level and not at hazard levels. |
| 32. | WNA | 3. | The use of a graded approach for the | | X – editorial, accepted | | | |

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| | | | safety evaluation of reactor designs with advanced safety features will also be addressed. | | | | | |
| 33. | WNA | 7. | 7 - Evaluation of External Hazards ~~Events~~ Safety for Nuclear Power Plants | | | X<br>Modified as: Evaluation of External Events Hazards Safety for Nuclear Power Plants | | |
| 34. | WNA | 7. | 7 - Evaluation of External Hazards ~~Events~~ Safety for Nuclear Power Plants | It is not clear if this § only deals with the definition of the characterization of the external hazards, or if it includes the methods for its analysis. May be a short explanation of the contents of the § should be added? Same remark for the §8 and §9 | | X - added clarifying text to each section in the proposed contents to hopefully add clarity to the DPP | | This section will cover: recommendations for assessment of external hazards in relation to safety assessment, development of reference level parameters, determination of responses, determination of HCLPF capacities, implementation of PSA etc. |