No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
Indonesia 56	2	1.1.	**Consider to rename Appendix I and Appendix II as Chapter 11 and Chapter 12 respectively**	Appendix I and Appendix II in this safety guide are in the same category of topic and are in same technical level with the main Chapters. Safety guide should not have appendix that is in the same category of topic and is in same technical level with the main Chapters.			X	This comment does not request the modification of the scope but the modification of the document structure. Appendix is still the part of the Safety Guide's recommendation and the same level as the main body. (Annex is not a part of recommendation.) Therefore, there is no need to rename them. In addition, Appendix is used for the case that there are many topics associated to a chapter. In this case of DS503, both Appendix is relevant to the chapter 4 and 5, and we believe the current structure is more readable than proposed structure.
USA 1	4	1.2.	This Safety Guide provides specific recommendations on the protection against internal and external hazards in the operation of nuclear power plants. This Guide provides new or updated recommendations ~~on~~ derived from enhanced understanding of operational aspects of hazards and combinations of hazards.	Improved wording. The recommendations are based on or derived from enhanced understanding, as detailed in Para. 1.3	X	1.2.This Safety Guide provides specific recommendations on the protection against internal and external hazards in the operation of nuclear power plants. This Guide provides new or updated recommendations derived from enhanced understanding of operational aspects of hazards and combinations of hazards.		Agree with improved wording
Russian Federation 1-1	4	1.5.	The previous edition of this guide was entirely devoted to fire safety only (Specific Safety Guides. Fire Safety in the Operation of Nuclear Power Plants, NS-G-2.1). However, the draft of new edition of this special safety guide has a new title "Protection against Internal and External Hazards in the Operation of Nuclear Power Plant", accordingly, the scope of recommendations has been expanded, which leads to duplication of the scope of this DS 503 manual with the SSG-64 guidelines (Protection against Internal Hazards in the Design of Nuclear Power Plants), DS498 (External Events Excluding Earthquakes in the Design of Nuclear Installations) and DS490 (Seismic Design of Nuclear Installations). Also, in this case, ii. 1.7, 1.11 (and a number of other items) still focuses only on fire safety provisions and does not fully correspond to the new scope.	Please clarify: - What is the reason for the alteration of the scope and title of DS 503 in comparison with the previous edition (NS-G-2.1)? - What is the difference between the provisions of DS 503 and SSG-64, DS498, DS490? Please, add explanatory information to i. 1.5 DS 503; - Please, correct the wording of pp. 1.7, 1.11 in relation to the scope of DS503.			X	The Document Preparation Profile (DPP) approved by the CSS stated that the TM (the Technical Meeting) concluded that the Safety Guide NS-G-2.1, "Fire Safety in the Operation of Nuclear Power Plants" (2000) should be revised with the objective to widen its scope to cover operational aspects for at least all internal hazards or even all internal and external hazards, because the other hazards are not addressed in the safety guides in the NPP operational domain. The current DPP has been developed based on the conclusions from this TM.
Indonesia 1	4	I.1.	The document should address Fukushima Accident as a lesson learned for hazard management	Fukushima Accident is an example of extreme external hazard to the plant that could happened and should considered in all stages of the plant.			X	While it is true that the Fukushima Accident is a good example and it is also true that every chapter of this document has been developed in the light of the experience of the Fukushima accident, but, the document compiles information from other issues and accident at other plants. This is true of most of IAEA documents revised after the Fukushima accident and there is no need to refer to the accident here.
USA 3	5	1.10.	For reactors cooled by other media, ~~including gas cooled reactors, or reactors based on innovative design concepts,~~ some of the recommendations in this Safety Guide might not be fully applicable, as application of these recommendations depends on the particular technology and the risks associated with internal and external hazards.	Delete strike-out text to improved clarity. Innovative design concepts is very brood phrase that includes much more than the choice of cooling media. "Other cooling media" is simpler and clearer.	X	1.10.This Safety Guide applies to water cooled nuclear power plants designed and operated in accordance with the requirements provided in IAEA SSR-2/1 (Rev. 1) [2] and SSR-2/2 (Rev. 1) [1], and with the recommendations complemented by IAEA SSG-64 [4], DS498 [5] and DS490 [6]. For reactors cooled by other media, some of the recommendations in this Safety Guide might not be fully applicable, as application of these recommendations depends on the particular reactor technology and the risks associated with internal and external hazards.		Agree with comment; the proposed text improves the overall clarity of the paragraph.
Russian Federation 1-2	5	1.7.	The previous edition of this guide was entirely devoted to fire safety only (Specific Safety Guides. Fire Safety in the Operation of Nuclear Power Plants, NS-G-2.1). However, the draft of new edition of this special safety guide has a new title "Protection against Internal and External Hazards in the Operation of Nuclear Power Plant", accordingly, the scope of recommendations has been expanded, which leads to duplication of the scope of this DS 503 manual with the SSG-64 guidelines (Protection against Internal Hazards in the Design of Nuclear Power Plants), DS498 (External Events Excluding Earthquakes in the Design of Nuclear Installations) and DS490 (Seismic Design of Nuclear Installations). Also, in this case, ii. 1.7, 1.11 (and a number of other items) still focuses only on fire safety provisions and does not fully correspond to the new scope.	- Please, correct the wording of pp. 1.7, 1.11 in relation to the scope of DS503.			X	Same as Russian Federation 1-1
Indonesia 2	5	1.7.	…in the ~~design and~~ operation of nuclear power plants. The risk due to fires at a specific plant site, as with many other hazards, is dependent on plant-specific factors in ~~design and~~ operation.	The scope of this publication only consider in the operation, design is discussed in another publication			X	This paragraph is merely stating a fact and providing general context that design and operation are considered during the operation of a NPP. This paragraph is providing background information as well.
Germany 3	5	1.7.	Operating experience gained from incidents and accidents in nuclear power plants around the world has continued to demonstrate that internal fire continues to be an important risk contributor in many States. A number of other hazards also have to be taken into account in the design and operation of nuclear power plants. The risk due to internal fires at a specific plant site, as with many other hazards, is dependent on plant-specific factors in design and operation.	Addition needed since the text refers to statements regarding internal fires. External fires are not so important risk contributors in most States.	X	1.7.Operating experience gained from incidents and accidents in nuclear power plants around the world has continued to demonstrate that fire continues to be an important risk contributor in many States. However, a number of other hazards also have to be taken into account in the design and operation of nuclear power plants.		Removed the words related to fire risks as this does not meet the intent of the paragraph.
USA 2	5	1.7.	~~The risk due to fires at a specific plant site, as with many other hazards, is dependent on plant-specific factors in design and operation.~~	Para 1.11 states "This Safety Guide provides detailed recommendations for the internal fire hazard which is common in most nuclear power plants."	X	1.7.Operating experience gained from incidents and accidents in nuclear power plants around the world has continued to demonstrate that fire continues to be an important risk contributor in many States. However, a number of other hazards also have to be taken into account in the design and operation of nuclear power plants.		Agreed with proposed text changes; in line with other comments.
UK 2	5	1.8.	The purpose of this Safety Guide is to provide recommendations on the management of nuclear power plants in relation to preparing for, prevention, protection, mitigation and coping with internal and external hazards as well as with the impacts of those hazards, to meet the safety requirements established in SSR-2/2 (Rev. 1) [1].	Delete '...operational...' because with it in, it implies these considerations only need to be thought about when in operation. Hazard management also needs to be considered at the design/ conception phase	X	1.8.The purpose of this Safety Guide is to provide recommendations on the management of nuclear power plants in relation to preparing for, prevention, protection, mitigation, and coping with internal and external hazards as well as with the impacts of those hazards, to meet the safety requirements established in SSR-2/2 (Rev. 1) [1].		Agree with the comclusion that the term "operational" implies oncly during the operational stage of plant life. Removing this term clarifies that hazard management must be considered during the conceptual, design, and construction phase of plant life.
Canada 1	5	1.8.	… protection, and mitigation of ~~and cope with~~ internal and external hazards	Redundant			X	Rejected since "coping" is part of the long-term aspects of dealing with hazards (i.e. such as flooding or earthquakes). As such, it is an additional aspect of hazard management to be considered.

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
Indonesia 3	5	1.9.	The recommendations in this Safety Guide are aimed primarily at operating organizations of nuclear power plants and regulatory bodies. They may also be of interest to other organizations involved in the design, construction, commissioning, operation and decommissioning of nuclear power plants, including technical support organizations, vendor companies (e.g., designers, engineering contractors, manufacturers), research establishments and universities providing services in support of a nuclear power plant, **as well as organizations involved in mitigating such hazards.**	Adding a conjunction to be consistent with Para 1.8	X	The recommendations in this Safety Guide are aimed primarily at operating organizations of nuclear power plants and regulatory bodies. They may also be of interest to other organizations involved in the design, construction, commissioning, operation and decommissioning of nuclear power plants, including technical support organizations, vendor companies (e.g. designers, engineering contractors, manufacturers), research establishments and universities providing services in support of a nuclear power plant, as well as organizations involved in mitigating such hazards.		The proposed addition to the paragraph helps to clarify that there are other "external" organizations that are involved with hazard mitigation efforts.
Indonesia 4	6	1.11.	This Safety Guide provides detailed recommendations for the internal fire hazard which is common in most nuclear power plants. As detailed application for other hazards will be site specific, this Safety Guide also provides the high-level recommendations applicable to a broad range of **internal and external** hazards, reactor types, and different operating phases.	Hazard both in internal and external hazard should be explained in detail in the scope. It is also proposed to develop guidelines on handling external fire hazard in Appendix I.	X	1.11.This Safety Guide provides detailed recommendations for the internal fire hazard which is common in most nuclear power plants. As detailed application for other hazards will be site specific, this Safety Guide also provides high-level recommendations applicable to a broad range of internal and external hazards, water cooled reactor types, and different operating phases.		Accepted proposed modification for consistency with the scope of the document.
Germany 4	6	1.11.	This Safety Guide provides detailed recommendations for the internal fire hazard which is common in most nuclear power plants. ~~As detailed application for other hazards will be site specific, t~~This Safety Guide also provides the high-level recommendations applicable to a broad range of hazards, reactor types, and different operating phases.	It is not understandable why other internal hazards like high energy pipe failure or load drop should be site specific. Site specific would better fit to external hazards. But anyhow, this part of the sentence is not needed.			X	Since the document attempts to include a wide variety of water-cooled reactor types, the list of applicable internal hazards most likely will vary. Also, dependent upon the type of reactor facility, and the subsequent licensing of the facility, internal hazards may vary from site to site.
USA 4	6	1.11.	As detailed application for other hazards will be site specific, this Safety Guide also provides ~~the~~ high-level recommendations applicable to a broad range of hazards, water cooled reactor types, and different operating phases.	1. "the" not needed 2. broad range of reactor types needs to be qualified since the guide only applies to water cooled types.	X	1.11.This Safety Guide provides detailed recommendations for the internal fire hazard which is common in most nuclear power plants. As detailed application for other hazards will be site specific, this Safety Guide also provides high-level recommendations applicable to a broad range of internal and external hazards, water cooled reactor types, and different operating phases.		Agree with comment; the proposed text improves the overall clarity of the paragraph.
USA 5	6	1.13.	This Safety Guide does not specifically address conventional aspects of ~~protection of the safety of~~ operating personnel safety, or ~~the protection of~~ property protection, except where this could affect the safety of the nuclear power plant.	Fewer words makes for better clarity	X	This Safety Guide does not specifically address conventional aspects of operating personnel safety, or property protection, except where this could affect the safety of the nuclear power plant.		Agree with comment; proposed text is simpler and makes paragtaph clearer.
USA 6	6	1.15.	This Safety Guide excludes postulated internal and external initiating events induced by deliberate human acts of malicious intent~~. Prevention and mitigation of malicious acts that could lead to such events~~ (either by on-site personnel or by third parties). ~~are outside the scope of this Safety Guide, and guidance~~ Guidance on this issue is provided in the IAEA Nuclear Security Series. [Provide Reference]	1. Edited to remove redundancy 2. Provide reference for IAEA Nuclear Safety Series	X	1.15.This Safety Guide excludes postulated internal and external initiating events induced by deliberate human acts of malicious intent (either by on-site personnel or by third parties). Guidance on this issue is provided in the IAEA Nuclear Security Series Nos. 13, 4, and 35-G [21-23].		
Belgium 1	7	1.17.	Section 2 provides general considerations ~~recommendation~~ on protection against hazards	To make it consistent with the title of section 2	X	1.17.Section 2 provides general considerations for the management of internal and external hazards in nuclear power plants. …		Provides consistency with Section 2 title.
Indonesia 5	7	1.17.	Section 2 provides general recommendation on protection against hazards in the operation of nuclear power plants. Section 3 focuses on the organization and responsibilities of ~~the~~ hazard management. Sections 4 and 5 provide recommendations for ensuring safety for internal and external hazards, respectively. Section 6 provides recommendations on the combination of internal and external hazards. Section 7 provides recommendations on updating ~~the~~ hazard management. Section 8 provides recommendations on material control and housekeeping on ~~the~~ hazard management. Section 9 provides recommendations on the maintenance and testing of equipment for hazard prevention, protection, mitigation and coping. Section 10 provides recommendations on **the** training of personnel for hazards. Appendices I and II provide detailed information on technical aspects ~~to be~~ considered in internal hazards and external hazards, respectively.	Article is not necessarily indefinite hazard management	X	1.17.Section 2 provides general considerations for the management of internal and external hazards in nuclear power plants. Section 3 focuses on the organization and responsibilities of hazard management. Sections 4 and 5 provide recommendations for ensuring safety for internal and external hazards, respectively. Section 6 provides recommendations on the combination of internal and external hazards. Section 7 provides recommendations on updating hazard management. Section 8 provides recommendations on material control and housekeeping on hazard management. Section 9 provides recommendations on maintenance and testing of equipment for hazard prevention, protection, mitigation and coping. Section 10 provides recommendations on training of personnel for hazards. Appendices I and II provide detailed information on technical aspects to be considered in internal hazards and external hazards, respectively.		Agree with comment. Text revised
Turkey 1	7	1.17.	First sentence of paragraph 1.17 should be changed as "Section 2 provides general considerations for the management of internal and external hazards in nuclear power plants the management of internal and external hazards in nuclear power plants."	Section 2 of the draft guide is related to the management of internal and external hazards in nuclear power plants, not the recommendations regarding the protection against hazards in the operation of nuclear power plants. Therefore, structure paragraph should be consistent with the related section title and content.	X	1.17.Section 2 provides general considerations for the management of internal and external hazards in nuclear power plants. …		
Russian Federation 2	8	2.1.	External hazards include natural or human induced events ~~**that originate outside the site boundary and outside the activities that are under the control of the operating organization, for which the operating organization has very little or no control. Such events are not connected to the operation of the site or conduct of an activity on the site, but could have an adverse effect on the safety of the site or activity.**~~ **unconnected with the operation of a facility or the conduct of an activity that could have an effect on the safety of the facility or activity**	Alignment with IAEA Safety Glossary. Terminology Used in Nuclear Safety and Radiation Protection 2018 Edition (**External event:** Events unconnected with the operation of a facility or the conduct of an activity that could have an effect on the safety of the facility or activity)	X	2.1.Internal hazards are those hazards to the safety of the nuclear power plant that originate from within the site boundary and are associated with failures of facilities and activities that are under the control of the operating organization. External hazards include natural or human induced events unconnected with the operation of a facility or the conduct of an activity that could have an effect on the safety of the facility or activity. Such events are not connected to the operation of the site or conduct of an activity on the site, but could have an adverse effect on the safety of the site or activity. In this Safety Guide, the word "hazard" or "hazards" refers to both internal and external hazards, and to the combination of these hazards unless where specifically noted. Examples of internal and external hazards are provided in paras 5.16 and 5.17 of SSR-2/1 (Rev. 1) [2].		Provides consistency with IAEA Safety Glossary.
Indonesia 6	8	2.1.	Internal hazards are those hazards to the safety of the nuclear power plant that originate from within the site boundary and are associated with failures of facilities and activities that are under the control of the operating organization that have the potential to cause a fire, **such as internal fires, explosion, missile, flooding, pipe break.** External hazards include natural or human induced events that originate outside the site boundary and outside the activities that are under the control of the operating organization, for which the operating organization has very little or no control, **such as seismic hazard, external flooding, extreme winds, volcanism and terrorism.**	Refer to para 1.11 mention about "This Safety Guide provides detailed recommendations for the internal fire hazard which is common in most nuclear power plants."			X	This section is providing general considerations for the management of internal and external hazards. Details of specific hazards are given later in the document and are not needed here (duplication).

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France 2	8	2.10.	(a) Application of the principle of defence in depth; ~~(b) Control of combustible materials and ignition sources, in particular during outages;~~	Control of combustible material and ignition sources is a part of defense in depth declination (cf. I.2)			X	Since this paragraph is taken directly from SSR 2/2, it will not be modified; the statement is applicable here and Appendix I. This sentence is direct quotation, so we cannot modify the original sentence.
France 1	8	2.2.	… The hazard prevention, protection and mitigation features include safety systems and safety features, that were not originally installed or designed as safety systems or measures.	This sentence is not clear. Why these features *"were not originally installed or designed as safety systems or measures"*? In the version of July 2020 after silent procedure, this sentence intended to explain the meaning of "hazard prevention, protection and mitigation features". It was better even not fully clear. Consider deletion of the sentence whilst it is not necessary	X	2.2.The term 'hazard management' is used to refer to a set of operational processes and measures for prevention, protection, and mitigation of hazards, and strategies for coping with the impact of these hazards to ensure the safe operation of nuclear power plants. Hazard prevention, protection, and mitigation features typically refer to safety systems and safety features, but might also include systems and features that were not originally installed or designed as safety systems or features. Hazard management also includes hazard preparedness, response, and recovery actions.		Paragraph re-written for clarity.
Indonesia 7	8	2.2.	..for coping with the impact of these hazards to ensure **the** safe operation of nuclear power plants.		X	2.2.The term 'hazard management' is used to refer to a set of operational processes and measures for prevention, protection, and mitigation of hazards, and strategies for coping with the impact of these hazards to ensure the safe operation of nuclear power plants. Hazard prevention, protection, and mitigation features typically refer to safety systems and safety features, but might also include systems and features that were not originally installed or designed as safety systems or features. Hazard management also includes hazard preparedness, response, and recovery actions.		Editorial comment; added.
Indonesia 8	8	2.2.	The term 'hazard management' is used to refer to a set of operational processes and measures for prevention, protection and mitigation of hazards, and strategies for coping with the impact of these hazards to ensure safe operation of nuclear power plants. **The hazard management also considers preparedness, response and recovery actions.**	The Hazard Management Cycle takes into account prevention, mitigation, response & preparedness, and also recovery.	X	2.2.The term 'hazard management' is used to refer to a set of operational processes and measures for prevention, protection, and mitigation of hazards, and strategies for coping with the impact of these hazards to ensure the safe operation of nuclear power plants. Hazard prevention, protection, and mitigation features typically refer to safety systems and safety features, but might also include systems and features that were not originally installed or designed as safety systems or features. Hazard management also includes hazard preparedness, response, and recovery actions.		Added for clarity and completeness.
Canada 2	8	2.2.	The hazard prevention, protection and mitigation features may also include ~~safety~~ those systems and ~~safety~~ features~~,~~ that were not originally installed or designed as safety systems or measures.	To improve clarity	X	2.2.The term 'hazard management' is used to refer to a set of operational processes and measures for prevention, protection, and mitigation of hazards, and strategies for coping with the impact of these hazards to ensure the safe operation of nuclear power plants. Hazard prevention, protection, and mitigation features typically refer to safety systems and safety features, but might also include systems and features that were not originally installed or designed as safety systems or features. Hazard management also includes hazard preparedness, response, and recovery actions.		Agree, makes paragraph more clear.
Turkey 2	8	2.2.	The following sentence "The hazard prevention, protection and mitigation features include safety systems and safety features, that were not originally installed or designed as safety systems or measures." should be changed as "…safety features, which were not originally installed or designed as safety systems or measures.	Editorial correction to make the sentence more understandable.	X	2.2.The term 'hazard management' is used to refer to a set of operational processes and measures for prevention, protection, and mitigation of hazards, and strategies for coping with the impact of these hazards to ensure the safe operation of nuclear power plants. Hazard prevention, protection, and mitigation features typically refer to safety systems and safety features, but might also include systems and features that were not originally installed or designed as safety systems or features. Hazard management also includes hazard preparedness, response, and recovery actions.		Entire text rewritten for clarity.
Germany 5	8	2.2.	The term 'hazard management' is used to refer to a set of operational processes and measures for prevention, protection and mitigation of hazards, and strategies for coping with the impact of these hazards to ensure safe operation of nuclear power plants. The hazard prevention, protection and mitigation features may include safety systems and safety features~~,~~ that were not originally installed or designed as safety systems or measures.	Clarification	X	2.2.The term 'hazard management' is used to refer to a set of operational processes and measures for prevention, protection, and mitigation of hazards, and strategies for coping with the impact of these hazards to ensure the safe operation of nuclear power plants. Hazard prevention, protection, and mitigation features typically refer to safety systems and safety features, but might also include systems and features that were not originally installed or designed as safety systems or features. Hazard management also includes hazard preparedness, response, and recovery actions.		See the rewritten version for clarity.

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USA 7	8	2.2.	~~The~~ Hazard prevention, protection and mitigation features refers to ~~include~~ safety systems and safety features, and may include systems or features that were not originally installed or designed as safety systems or features ~~measures~~.	Edited for clarity.	X	2.2.The term 'hazard management' is used to refer to a set of operational processes and measures for prevention, protection, and mitigation of hazards, and strategies for coping with the impact of these hazards to ensure the safe operation of nuclear power plants. Hazard prevention, protection, and mitigation features typically refer to safety systems and safety features, but might also include systems and features that were not originally installed or designed as safety systems or features. Hazard management also includes hazard preparedness, response, and recovery actions.		Agree with comment; entire text revised to incorporate all comments.
Indonesia 9	8	2.5.	The integrated management system should **incorporate** ~~integrate~~ hazard management	The term incorporate is more appropriate to describe some of the potential hazards that could cause a fire hazard in the installation	X	2.5.The integrated management system should incorporate hazard management. Hazard management should aim at preventing, mitigating, and coping with hazards and reducing the potential for common cause failure and thus reducing threats to safety. The consideration for the management processes and management programmes are presented in Section 3.		The use of "incorporate" makes the sentence clear.
Germany 6	8	2.5.	The integrated management system should integrate hazard management. Hazard management should aim at preventing hazards and reducing the potential for common cause failure ...	Clarification	X	2.5.The integrated management system should incorporate hazard management. Hazard management should aim at preventing, mitigating, and coping with hazards and reducing the potential for common cause failure and thus reducing threats to safety. The consideration for the management processes and management programmes are presented in Section 3.		Provides clarification to the paragraph.
USA 8	8	2.5.	~~2.5.~~ The integrated management system should ~~integrate~~ include hazard management. Hazard management should aim at reducing the potential for common cause failure and thus reducing threats to safety. The consideration for the management processes and management programmes are presented in Section 3.	1. This para should be part of para 2.4. 2. Edited wording to remove redundancy	X	2.5.The integrated management system should incorporate hazard management. Hazard management should aim at preventing, mitigating, and coping with hazards and reducing the potential for common cause failure and thus reducing threats to safety. The consideration for the management processes and management programmes are presented in Section 3.		Changed "include" as proposed to "incorporate."
Russian Federation 3	8	2.6.	… ~~**The operating organization should maintain and update, as necessary,**~~ **The modifications of** all features for prevention, protection and mitigation of hazards **shall be provided by operating organization** as part of the programme for managing modifications.	Text improvement. Also "maintain and update" are not the same activity as "modifications" (see provisions of NS-G-2.3, NS-G-2.6 and their new versions DS 497B, DS 497E)	X	The operating organization should update, as necessary, all features for prevention, protection and mitigation of hazards as part of the programme for managing modifications. Recommendations for hazard management and its review regarding modifications are provided in Sections 3 and 7.		Removed the words "and maintain" as this activity is not part of the modification programme.
UK 3	9	2.10.	After bullet (a) we suggest adding: "protection should be simple and passive where achievable;"	Passive protection should be the focus, with active measures as defense in depth			X	This sentence is direct quotation, so we cannot modify the original sentence.
USA 11	9	2.10.	Requirement 22 of SSR-2/2 (Rev. 1) [1] states: **"The operating organization shall make arrangements for ensuring fire safety."** ~~(Requirement 22 of SSR-2/2 (Rev. 1) [1])~~	Delete strikeout text because it is redundant.	X			
Hungary 5	9	2.7.	"Systematic safety assessments of the plant, ~~in accordance with the regulatory requirements,~~ shall be performed by the operating organization throughout the plant's operating lifetime, with due account taken of operating experience and significant new safety related information from all relevant sources."	(While I know that this is not the revision of SSR 2/2 Rev. 1, I think this issue should be noted regardless) I think it is the IAEA's and its members' responsibility to propose international best practices on when/how often these systematic safety assessments should be performed, but if it only refers back to the national requirements (which should be developed based on the IAEA requirements, which refers back to the national requirement, which is based on the IAEA requirement and so on) then its circular and lose its purpose. This requirement without the deleted text offers the exact same content without the indicated problem			X	The proposed revision is for SSR 2/2 and not DS503. This sentence is direct quotation, so we cannot modify the original sentence.
Indonesia 10	9	2.8.	The operating organization shall establish an accident management program that includes emergency plans for preparedness and response to nuclear or radiological emergencies caused by internal or external fire hazards. The program should be periodically reviewed and revised if necessary.	The important thing accident management program which covers emergency plan and periodically revised to anticipate unpredicted events			X	The proposed revision is for SSR 2/2 and not DS503. This sentence is direct quotation, so we cannot modify the original sentence.
Indonesia 11	9	2.9.	Hazard management and decision making in hazard management should be harmonized with the emergency plan and the accident management programme, to ensure coping with events arising from internal or external hazards and mitigation of the consequences of these events in case of a nuclear or radiological emergency. Recommendations on accident management and preparedness for a nuclear or radiological emergency are provided in IAEA Safety Standards Series No.~~s~~ SSG-54,...	Replace s with .	X	Recommendations on accident management and preparedness for a nuclear or radiological emergency are provided in IAEA Safety Standards Series Nos. SSG-54, Accident Management Programmes in Nuclear Power Plants [8] and GS-G-2.1, Arrangements for a Nuclear or Radiological Emergency [9], and recommendations on occupational radiation protection in a nuclear or radiological emergency are provided in IAEA Safety Standards Series No. GSG-7, Occupational Radiation Protection [10].		Added "." after Nos. since there is more than one Safety Standards Series document listed.
Indonesia 12	9	2.9.	and recommendations on occupational radiation protection in a nuclear or radiological emergency are provided in IAEA Safety Standards Series No. GS-G-7, Occupational Radiation Protection [10]	Add "-" between GS and G			X	The number of the Safety Standard is "GSG-7". "-" is no needed.
USA 9	9	2.9.	Para 2.9 should be part of para 2.8	Para 2.9 discusses the hazard management aspects of the SSR 2.2 requirements identified in Para 2.8			X	Comment is understandable because in only this part the requirement text and application for hazard management is separated. However, Paragraph 2.9 does not discuss SSR 2/2. It discusses other relevant documents. The referenced paragraph 2.8 is discussing the SSR 2/2 requirements for an accident management programme. Paragraph 2.9 is discussing aspects of hazard management. Although 2.8 and 2.9 are relevant, but they are two entirely different items and should be two different paragraphs.
USA 10	9	2.9.	While these IAEA Safety Standards provide recommendations on the radiation-related hazards in a severe accident or radiological emergency management, this Safety Guide covers all the other means that assist the operating organization in coping with hazards ~~with~~ to ensure minimal consequences.	Edit for clarity. Otherwise "with minimal consequences" could be understood to qualify hazards, not the desired coping result	X	While these IAEA Safety Standards provide recommendations on the radiation-related hazards in a severe accident or radiological emergency management, this Safety Guide covers all the other means that assist the operating organization in coping with hazards to ensure minimal consequences.		Agreed with comment; changed text as proposed.
Germany 7	10	2.11.	… "The non-radiation-related safety programme ~~[footnote omitted]~~ shall include arrangements for the planning, implementation, monitoring and review of the relevant preventive and protective measures, and it shall be integrated with the nuclear and radiation safety programme" (para. 5.26. of SSR-2/2 (Rev. 1) [1]).	Editorial			X	Since the text in the documented is a quote from SSR 2/2, the lack of the footnote needs to be identified. This comment is editorial only. The text is written in accordance with the IAEA Style for the incorporation of quotes that include footnotes, e.g. SSG-62, para 4.235.
USA 12	10	2.11.	Requirement 23 of SSR-2/2 (Rev. 1) [1] states:**"The operating organization shall establish and implement a programme to ensure that safety related risks associated with non-radiation-related hazards to personnel involved in activities at the plant are kept as low as reasonably achievable."** ~~(Requirement 23 of SSR-2/2 (Rev.1) [1]).~~	Delete strikeout text because it is redundant.	X			Agree; text removed because it was redundant.

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
USA 13	10	2.11.	~~The hazard management should be implemented by the personnel involved in activities at the plant.~~ The measures for hazard management should be considered as part of the measures implemented to ensure the industrial safety of the personnel.	Delete strikeout text or move it to a more appropriate section. It does not really address the point of this paragraph (i.e., that radiation and non-radiation safety programs should be integrated.	X	2.11.Requirement 23 of SSR-2/2 (Rev. 1) [1] states: "The operating organization shall establish and implement a programme to ensure that safety related risks associated with non-radiation-related hazards to personnel involved in activities at the plant are kept as low as reasonably achievable." "The non-radiation-related safety programme [footnote omitted] shall include arrangements for the planning, implementation, monitoring and review of the relevant preventive and protective measures, and it shall be integrated with the nuclear and radiation safety programme" (para. 5.26. of SSR-2/2 (Rev. 1) [1]). The operating organization should consider hazard management when implementing industrial safety measures for plant personnel.		Agree with commnet; text removed for clarity and correctness.
USA 14	10	2.11.	~~The measures for hazard management should be considered as part of the measures implemented to ensure the industrial safety of the personnel.~~ Measures implemented to ensure the industrial safety of plant personnel should consider measures for hazard management.	This statement as originally written seems to contradict Para 1.12 that states: "This Safety Guide does not specifically address conventional aspects of protection of the safety of operating personnel, or the protection of property, except where this could affect the safety of the nuclear power plant."	X	2.11.Requirement 23 of SSR-2/2 (Rev. 1) [1] states: "The operating organization shall establish and implement a programme to ensure that safety related risks associated with non-radiation-related hazards to personnel involved in activities at the plant are kept as low as reasonably achievable." "The non-radiation-related safety programme [footnote omitted] shall include arrangements for the planning, implementation, monitoring and review of the relevant preventive and protective measures, and it shall be integrated with the nuclear and radiation safety programme" (para. 5.26. of SSR-2/2 (Rev. 1) [1]). The operating organization should consider hazard management when implementing industrial safety measures for plant personnel.		Agree with commnet; text removed for clarity and correctness.
Hungary 6	10	2.12.	"Operating procedures shall be developed that apply comprehensively (for the reactor and its associated facilities) for normal operation, anticipated operational occurrences and accident conditions, ~~in accordance with the policy of the operating organization and the requirements of the regulatory body."~~	(While I know that this is not the revision of SSR 2/2 Rev. 1, I think this issue should be noted regardless) I think it's the same issue as the previous one. If the member states should develop their legal and regulatory framework based on or in accordance with the IAEA requirements then the IAEA requirements cannot refer back to the national legal and regulatory framework because that would be circular. I believe that this isn't an iterative process, the international requirements/recommendations are coming from the IAEA, which are then used to amend the national framework therefore the IAEA should not refer back to the rules and practices of the national regulator and operator. And just as in the previous comment I believe that the deleted text adds nothing to the requirement. It only states that the licensee shall develop its procedures in accordance with its own policies and the local law, which is a triviality and a preliminary condition to get a license in the first place.			X	Same as Hungary 5
Japan 3	10	3.24.	When a hazardous event has occurred or hazardous conditions have been forecasted, a decision-making process should be initiated by the plant management ~~operating organization~~ to ensure the following: –A timely assessment that ....; –The performance of time-sensitive actions ....; –Identification of any support needed ...; –Maintaining the fundamental safety functions .... –Identification of alternative actions	A decision making should be done by the plant management. To be consistent with 3.20 to 3.23.			X	Plant managemnt is part of the operating organization. While it is true that there are cases where plant management decisions are involved where a high degree of judgment is required, decsion making for these issues discussed in this paragraph may be made be a number of organizations/people anywhere in the entire operating organization. Therefore, isolating plant management to make the decisions may not be correct. Even if the comments were intended to clarify the responsible organization, the requirement and recommendation for role and responsibility on decision making are already established in GSR Part 2 and NS-G-2,4 (DS497C). We would like to leave the current description unchanged as it is applicable to any member states.
USA 15	11	2.13.	Requirement 28 of SSR-2/2 (Rev. 1) [1] states: **"The operating organization shall develop and implement programmes to maintain a high standard of material conditions, housekeeping and cleanliness in all working areas."** ~~(Requirement 28 of SSR-2/2 (Rev. 1) [1])~~	Delete strikeout text because it is redundant.	X			
USA 16	11	2.13.	~~The operating organization should monitor the potential impact of material conditions and manage housekeeping on the occurrence or progression of hazards and their consequences.~~ The operating organization should consider issues arising from potential for hazards, hazard progression and hazard consequences when developing and implementing programs to maintain material conditions and manage housekeeping.	The revised statement better reflects how SSR-2/2 Requirement 28 relates to a hazard management program	X	2.13.Requirement 28 of SSR-2/2 (Rev. 1) [1] states: "The operating organization shall develop and implement programmes to maintain a high standard of material conditions, housekeeping and cleanliness in all working areas." "Administrative controls shall be established to ensure that operational premises and equipment are maintained, well-lit and accessible, and that temporary storage is controlled and limited. Equipment that is degraded (owing to leaks, corrosion spots, loose parts or damaged thermal insulation, for example) shall be identified and reported and deficiencies shall be corrected in a timely manner" (para. 7.10 of SSR-2/2 (Rev. 1) [1]). The operating organization should consider the potential for hazards, hazard progression, and hazard consequences when developing and implementing programmes to maintain proper material conditions and housekeeping. The operating organization should maintain proper housekeeping at all times, even if some actions are particularly important only at times when an external hazard is forecasted.		Agree; proposed text make the statement more clear.
Russian Federation 4	11	2.14.	The operating organization should identify the potential **internal** hazards that might arise during maintenance, testing, surveillance and inspection activities. **The influence of existing external hazards during maintenance, testing, surveillance and inspection activities should be determined.**	Internal hazards may result from maintenance, testing, supervision and inspection activities, but external hazards are independent from these activities.	X	2.14.Requirement 31 of SSR-2/2 (Rev. 1) [1] states: "The operating organization shall ensure that effective programmes for maintenance, testing, surveillance and inspection are established and implemented." The operating organization should identify the potential internal hazards that might arise during maintenance, testing, surveillance, and inspection activities. These hazards should be taken into account when developing the programme for hazard management. Hazard management issues should be considered when developing programmes for maintenance, testing, surveillance and inspection.		Based upon the definition of external haards, the comment is correct.

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
Indonesia 14	11	2.14.	Hazard management should be related to the programme for maintenance, testing, surveillance and inspection **related to ageing management, and also for decommissioning**.	The management of internal and external hazards in nuclear power plants should be considered for all stage including decommissioning. Ageing management ensures the availability of required safety functions throughout the service life of the plant, with account taken of changes that occur with time and use.			X	While the proposed text change is understood, the existing section is merely emphasizing what is discussed in SSR 2/2. Additional programmes are discussed later in DS503. No further discussion is needed here.
USA 17	11	2.14.	~~Hazard management should be related to the programme for maintenance, testing, surveillance and inspection.~~ Hazard management issues should be considered when developing programmes for maintenance, testing, surveillance and inspection.	The revised statement better reflects that hazard management considerations should be integrated into programs for maintenance, testing, & inspection	X	2.14.Requirement 31 of SSR-2/2 (Rev. 1) [1] states: "The operating organization shall ensure that effective programmes for maintenance, testing, surveillance and inspection are established and implemented." The operating organization should identify the potential internal hazards that might arise during maintenance, testing, surveillance, and inspection activities. These hazards should be taken into account when developing the programme for hazard management. Hazard management issues should be considered when developing programmes for maintenance, testing, surveillance and inspection.		Agree with proposed changes; provides clarity
Hungary 7	11	2.15.	The operating organization should identify the potential hazards that might arise during outages, including low power and shutdown modes. Hazard management should take into account the dynamic changes in plant conditions during outages and factors such as availability of safety features during shutdown, protection zones (e.g. containment vessel) and increased resources (e.g. workers, combustibles, scaffoldings, vehicles). If possible Probabilistic Safety Assessment or equivalent risk assessment methods in the national practice should be utilized during the planning of outages in order to minimize risks and reduce outage intervals.	As far as I know all countries using PSA during the planning of outages have a good experience with this method. PSA provides a tool to greatly reduce the risks against which this requirement tries to protect the facility therefore I believe it would be beneficial to mention it in the description of the SSR requirement.			X	While it is agreed that PSA is a worthwhile tool in establishing the risk associated with hazards, this document is to provide for the development and implementation of hazard management practices. Risk is just one part of the implementation of overall hazard management practices. Not all countries use PSA the same way.
Canada 3	11	2.15.	… the dynamic changes in plant SSC (structures, systems and components) conditions during outages	To improve clarity. The term "plant condition" or "plant state" has been used with a well-defined meaning, i.e., a categorization of normal operations and events in terms of their likelihood of occurrence for establishing nuclear safety criteria.	X	2.15.Requirement 32 of SSR-2/2 (Rev. 1) [1] states: "The operating organization shall establish and implement arrangements to ensure the effective performance, planning and control of work activities during outages." The operating organization should identify the potential hazards that might arise during outages, including low power and shutdown modes. Hazard management should take into account the dynamic changes in plant conditions, including structures, systems, and components during outages and factors such as availability of safety features during shutdown, protection zones (e.g. containment vessel) and increased resource needs (e.g. additional workers, combustibles, scaffoldings, vehicles). \		Added "including structures, systems, and components" to add clarity.
USA 18	11	2.15.	Hazard management should take into account the dynamic changes in plant conditions during outages and factors such as availability of safety features during shutdown, protection zones (e.g. containment vessel) and increased resources~~s~~ needs (e.g. due to additional workers, combustibles, scaffoldings, vehicles).	Edited for clarity. As originally written, it is not clear what "increased resources" means.	X	2.15.Requirement 32 of SSR-2/2 (Rev. 1) [1] states: "The operating organization shall establish and implement arrangements to ensure the effective performance, planning and control of work activities during outages." The operating organization should identify the potential hazards that might arise during outages, including low power and shutdown modes. Hazard management should take into account the dynamic changes in plant conditions, including structures, systems, and components during outages and factors such as availability of safety features during shutdown, protection zones (e.g. containment vessel) and increased resource needs (e.g. additional workers, combustibles, scaffoldings, vehicles). \		Agree; text modified for clarity.
Hungary 1	11	2.16.	The operating organization should ensure that hazard management is implemented and maintained during the decommissioning regime prior the power operation regime is changed into cold shutdown or decommissioning regime, taking into account any changes in the assessed hazards.	The timing is important. It is not sure that the hazard management during the decommissioning regime is available during the power operation regime.	X	2.16.Requirement 33 of SSR-2/2 (Rev. 1) [1] states: "The operating organization shall prepare a decommissioning plan and shall maintain it throughout the lifetime of the plant, unless otherwise approved by the regulatory body, to demonstrate that decommissioning can be accomplished safely and in such a way as to meet the specified end state." The operating organization should ensure that hazard management is included in the decommissioning plan, taking into account any changes in the assessed hazards.		Revised the test to discuss that hazard management should be included in the decommissioning plan. This is to be consistent with the SSR requirements.
Indonesia 13	11	2.16.	The operating organization should ensure that hazard management is implemented and maintained during decommissioning, taking into account any changes in the assessed hazards.	This sentences is not suitable since the requirement 33 states "..decommissioning plan and shall maintain it throughout the lifetime of the plant,..."	X	2.16.Requirement 33 of SSR-2/2 (Rev. 1) [1] states: "The operating organization shall prepare a decommissioning plan and shall maintain it throughout the lifetime of the plant, unless otherwise approved by the regulatory body, to demonstrate that decommissioning can be accomplished safely and in such a way as to meet the specified end state." The operating organization should ensure that hazard management is included in the decommissioning plan, taking into account any changes in the assessed hazards.		Revised the test to discuss that hazard management should be included in the decommissioning plan. This is to be consistent with the SSR requirements.
Belgium 2	12	2.17.	…different nuclear power plants at the same site for the case of multiple plants very near sites or on the same site ..	No proposal, but this part of the sentence seems to us incorrectly structured. To be reworded?	X	2.17.Hazard management should consider hazards occurring at each reactor unit at a site. It should also include consideration of hazards at co-located or nearby nuclear power plants, even if operated by a different operating organization. This includes the use of shared spent fuel pools.		Agree with editorial comment
Indonesia 15	12	2.17.	site operated by ~~differing~~ **different** operating organizations.	Replace differing with different	X	2.17.Hazard management should consider hazards occurring at each reactor unit at a site. It should also include consideration of hazards at co-located or nearby nuclear power plants, even if operated by a different operating organization. This includes the use of shared spent fuel pools.		Agree with editorial comment
Germany 8	12	2.17.	Hazard management should include all consequences of hazards occurring at different reactor units or at different nuclear power plants including spent fuel pools at the same site for …	Precision is needed. Therefore, the spent fuel pools being part of NPPs but not representing reactor units but additional nuclear sources, need to be added not to be excluded because of misinterpretations.	X	2.17.Hazard management should consider hazards occurring at each reactor unit at a site. It should also include consideration of hazards at co-located or nearby nuclear power plants, even if operated by a different operating organization. This includes the use of shared spent fuel pools.		Agree with adding precision as discussed in the comment.

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
USA 19	12	2.17.	~~Hazard management should include all consequences of hazards occurring at different reactor units or at different nuclear power plants at the same site for the case of multiple plants very near sites or on the same site operated by differing operating organizations.~~ Hazard management should consider hazards occurring at each reactor unit at a site. It should also include consideration of hazards at co-located or nearby nuclear power plants, even if operated by a different operating organization.	The proposed text is much clearer and more concise that the original formulation.	X	2.17.Hazard management should consider hazards occurring at each reactor unit at a site. It should also include consideration of hazards at co-located or nearby nuclear power plants, even if operated by a different operating organization. This includes the use of shared spent fuel pools.		Agree; text changed to as proposed.
Belgium 3	12	2.18.	Hazards can induce initiating event**s** that might cause …	Typographical correction	X	2.18.Hazards might lead to releases of radioactive material and associated hazardous material by inducing initiating events that might: (1) cause equipment failures; (2) degrade performance of barriers; or (3) degrade means for preventing harmful effects.		Agree with grammatical correction.
UK 4	12	2.18.	Hazards can induce initiating events that might cause failures of equipment which can lead to releases of radioactive material. The nuclear safety assessment of the power plant shall consider these events to ensure safety measures commensurate with the potential consequences are provided.	The paragraph in the draft does not make sense as written.	X	2.18.Hazards might lead to releases of radioactive material and associated hazardous material by inducing initiating events that might: (1) cause equipment failures; (2) degrade performance of barriers; or (3) degrade means for preventing harmful effects.		Text re-written for clarity.
Germany 9	12	2.18.	Hazards can induce initiating event**s** that might cause failures of equipment or means that are necessary for preventing harmful effects, and that might adversely affect, directly or indirectly, the required safety functions and barriers and might …	To avoid misunderstandings and provide a comprehensive argumentation, not only harmful effects to barriers but also to the safety functions needed to be fulfilled.	X	2.18.Hazards might lead to releases of radioactive material and associated hazardous material by inducing initiating events that might: (1) cause equipment failures; (2) degrade performance of barriers; or (3) degrade means for preventing harmful effects.		Agree with commnet; additional words provide clarity and impact.
USA 20	12	2.18.	~~Hazards can induce initiating event that might cause failures of equipment or means that are necessary for preventing harmful effects, and that might adversely affect, directly or indirectly, the barriers and might lead to releases of radioactive material and associated hazardous material.~~ Hazards may lead to releases of radioactive material and associated hazardous material by inducing initiating events that may: (1) cause equipment failures; (2) degrade performance of barriers; or (3) degrade means for preventing harmful effects	The proposed text is much clearer and more concise that the original formulation.	X	2.18.Hazards might lead to releases of radioactive material and associated hazardous material by inducing initiating events that might: (1) cause equipment failures; (2) degrade performance of barriers; or (3) degrade means for preventing harmful effects.		Agree; Text rewritten for clarity.
Germany 10	12	2.19.	… leading ~~into~~ accident conditions.	Clarification	X	2.19.While it might not be practical or possible to prevent a hazard or its impacts from triggering an unanticipated operational occurrence, hazard management should ensure that, to the extent practicable, hazards do not trigger a more severe plant state, leading to accident conditions. For example, hazard management could help to prevent a single fire event from causing multiple safety system failures.		Revised for clarity.
USA 21	12	2.19.	While it might not be practical or possible to prevent a hazard or its impacts from triggering an unanticipated operational occurrence, hazard management should ensure that, to the extent practicable, hazards do not trigger a more severe plant state, leading into accident conditions. ~~For example, hazard management could help ensure that multiple failure of safety systems caused by a single fire event be avoided.~~ For example, hazard management could help to prevent a single fire event from causing multiple safety system failures.	Edited to improve clarity.	X	2.19.While it might not be practical or possible to prevent a hazard or its impacts from triggering an unanticipated operational occurrence, hazard management should ensure that, to the extent practicable, hazards do not trigger a more severe plant state, leading to accident conditions. For example, hazard management could help to prevent a single fire event from causing multiple safety system failures.		Agree; Text revised for clarity.
Indonesia 16	12	2.20.	Inspections should be implemented for equipment and features that cope with (and, if possible, detect) hazards, detect signs that might lead to the occurrence of an internal hazard, or are needed for the implementation of corrective actions to ensure protection against a hazard. Where necessary, additional inspections should be in place for coping with hazards. Hazards should be taken into account in the planning and conduct of inspections.	Move this sentences to Chapter 9. INSPECTION, MAINTENANCE, AND TESTING OF HAZARD PROTECTION AND MITIGATION MEASURES			X	This section provides a general recommendation for inspecting equipment and features that are used to prevent, mitigate, and cope with hazards. Chapter 9 provides additional recommendations and more details. This paragraph was re-written for clarity by other MS comment.
UK 5	12	2.20.	This paragraph does not indicate what the purpose of the inspections is (presumably to "to fulfil the functions that they are expected to perform and, ultimately the main safety functions, in accordance with the safety requirement" This is taken from SSG-30, which it would be helpful to reference here (and, in particular, paragraphs 2.1 and 4.4 of that document).	The reason for undertaking these inspections would help readers.			X	The entire paragraph was re-written with the "additional inspections" sentence removed. (See USA 22) This inclusion of SSG-30 here is not really applicable; the guidance provided in Chapter 9 is felt to be acceptable.
USA 22	12	2.20.	~~Inspections should be implemented for equipment and features that cope with (and, if possible, detect) hazards, detect signs that might lead to the occurrence of an internal hazard, or are needed for the implementation of corrective actions to ensure protection against a hazard. Where necessary, additional inspections should be in place for coping with hazards. Hazards should be taken into account in the planning and conduct of inspections.~~ Hazards should be considered in the planning and conduct of inspections. Inspections should be implemented for equipment and features for: (1) hazard detection; (2) hazard prevention or mitigation; or (3) coping with hazards or hazard impacts.	Edited to improve clarity and conciseness	X	2.20.Hazards should be considered in the planning and conduct of inspections. Inspections should be implemented for equipment and features for: (1) hazard detection; (2) hazard prevention or mitigation; or (3) coping with hazards or hazard impacts.		Agree; text rewritten for clarity.
Russian Federation 5	12	2.21.	– IAEA Safety Standards Series No. NS-G-2.3, Modifications to Nuclear Power Plants [11]; – IAEA Safety Standards Series No. NS-G-2.4, The Operating Organization for Nuclear Power Plants [12]; IAEA Safety Standards Series No. NS-G-2.6, Maintenance, Surveillance and In-Service Inspection in Nuclear Power Plants [13]; – IAEA Safety Standards Series No. NS-G-2.8, Recruitment, Qualification and Training of Personnel for Nuclear Power Plants [14]; – IAEA Safety Standards Series No. NS-G-2.14, Conduct of Operations at Nuclear Power Plants [15]; – IAEA Safety Standards Series No. SSG-25, Periodic Safety Review for Nuclear Power Plants [16]; – IAEA Safety Standards Series No. SSG-54, Accident Management Programmes in Nuclear Power Plants [8].	Incorrect links. Guidelines are in the process of replacing - see draft Safety Guides DS497A (B + G).	X	No changes at this time.		All of these links will have to be -reverified prior to final publication.

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
UK 1	12	I.3.	Missing Interface General (but also 2.21, 3.20, 4.8, 5.7, 9.3, I.3, I.13, I.56, I.83) Reference and acknowledgement of where SSG-30 fits into the hazards case is key for ensuring hazards are appropriately implemented into the design and controlled throughout the life of the plant	A missing interface with the wider IAEA guidance	X	I.3 and I.13 Further guidance of the significance of safety classification of Structures, Systems and Components for fire protection systems are given in the SSG-30.		Comment is understood. SSG-30 is for the classification of SSCs during the design (and construction) phase of the plant and is based on preventing and mitigating a reactor accident (paraphrased) and is largely dictated by the regulatory organizations. Based upon the text of DS503, while the operating organization is reviewing and analyzing hazards and hazard combinations (may or may not be a regulatory requirement), it may be prudent to reevaluate SSCs to be reassigned and/or modified for the protection and mitigation of hazards. Basically, the reassignment and/or modificaiton of such SSCs is a design activity and is not within the scope of this document. On the other hand, the established methodologies for fire hazard analysis (paras I.3, I.10 and I.13) is right place to give the cross-reference with SSG-30 to guide the significance of safety classification of SCC. (I.10 is accepted to refer SSG-30 by comment UK 18).
Russian Federation 6-1	13	2.22.	2.22. In accordance with the objectives of defence in depth, the operating organization should establish procedures to operate the features for prevention, protection and mitigation for all hazards and implement strategies for coping with hazard impact to ensure that the fundamental safety functions are maintained for all plant states. … 2.24. In accordance with Requirement 22 of IAEA SSR-2/2 (Rev. 1) [1] and Requirement 7 of IAEA SSR-2/1 (Rev. 1) [2] on the application of defence in depth, the operating organization should verify defence in depth for internal fire hazards in-line with corresponding operational limits and conditions (See Appendix ~~A.1.~~ **I, section I.1**). Appendix I *2.22. В соответствии с целями глубокоэшелонированной защиты эксплуатирующей организации следует установить процедуры для эксплуатации средств предотвращения, защиты и смягчения последствий всех опасностей и реализовать стратегии по преодолению воздействия опасностей, чтобы гарантировать, что основные функции безопасности поддерживаются для всех состояний станции.* … *("In accordance with the objectives of defence in depth, the operating organization should establish procedures to operate the features for prevention, protection and mitigation for all hazards and implement strategies for coping with hazard impact to ensure that the fundamental safety functions are maintained for all plant states...."* *Translation by Technical officer Kaz Nagashima)*	1. The provisions of these paragraphs do not correspond to the approaches to defense in depth (DiD) specified in SSR-2/1 (rev. 1), since SSR-2/1 does not cover the concept of DiD to external and internal impacts. It is assumed that the design should take into account the loads from such impacts (see also "Considerations on the Application of the IAEA Safety Requirements for the Design of Nuclear Power Plants. IAEA-TECDOC-1791"). In addition, as specified in Annex I, Section I.1, the DiD concept (in relation to fire safety) is a separate concept not related to the approach outlined in SSR-2/1. The text needs to be revised, including the need to define the DiD for fire safety and clarify the role of means for protection against external influences in the DiD, defined in accordance with SSR-2/1. 2.			X	While it is true that SSR-2/1 (rev.1) does not "specifically" mention DiD for external and internal "hazards", it is mentioned and implied that DiD is applicable to prevent/mitigate operational occurrences (including those occurrences that are outside operational control) from becoming reactor accidents. DiD along with the fundamental safety functions should provide the necessary means to achieve nuclear safety for internal and external hazards. Therefore, DiD as discussed in SSR 2/1 (rev.1) is applicable. Although it is known that DiD in fire protection is consisted by three layers (See I.2) and is separate concept from INSAG-10's five layers, objectives of DiD for the fundamental safety in this document are the common and do not need to be emphasised. In addition, the discussion in the Safety Standard Review Committees (NUSSC etc.) concluded that the description about DiD should be limited and it should be enough to refer SSR-2/1 (rev.1), SSR-2/2 (rev.1).
Germany 11	13	2.22.	… all plant operational states	Clarification to precise terminology	X	2.22.In accordance with the objectives of defence in depth, the operating organization should establish procedures to operate the features for prevention, protection and mitigation for all hazards and implement strategies for coping with hazard impact to ensure that the fundamental safety functions are maintained for all plant operational states.		Agree with comment; revised text
Japan 1	13	2.23.	The operating organization should consider following an approach for defence in depth applicable during operation by a combination of maintaining engineered features presented in Requirement 7 of IAEA SSR-2/1 (Rev. 1) [2] and implementing procedural measures presented in Requirement 26 of IAEA SSR-2/2 (Rev. 1) [1] to protect the plant from hazards. The engineered features primarily complement the implementation of defence in depth and the procedural measures against hazards provide additional assurance to engineered features, by monitoring, warning, alerting, post event management and assessment of unanticipated plant failures.	For usr-friendliness. Clarification of specific requirement in SSR-2/1 (Rev. 1) and SSR-2/2 (Rev. 1), as do in other paragraphs of this draft publication. The "engineered features" is appeared in para 4.1.(c) under Requirement 7 of IAEA SSR-2/1 (Rev.1). The "procedural measures" is considered as "operating procedures," which is defined in Requirement 26 of IAEA SSR-2/2 (Rev.1).	X	2.23.The operating organization should consider following an approach for defence in depth applicable during operation by a combination of maintaining engineered features presented in Requirement 7 of IAEA SSR-2/1 (Rev. 1) [2] and implementing procedural measures presented in Requirement 26 of IAEA SSR-2/2 (Rev. 1) [1] to protect the plant from hazards. The engineered features primarily complement the implementation of defence in depth and the procedural measures against hazards provide additional assurance to engineered features, by monitoring, warning, alerting, post event management and assessment of unanticipated plant failures.		The proposed revision does clarify the statement and provides user-friendliness.
Russian Federation 6-2	13	2.24.	2.22. In accordance with the objectives of defence in depth, the operating organization should establish procedures to operate the features for prevention, protection and mitigation for all hazards and implement strategies for coping with hazard impact to ensure that the fundamental safety functions are maintained for all plant states. … 2.24. In accordance with Requirement 22 of IAEA SSR-2/2 (Rev. 1) [1] and Requirement 7 of IAEA SSR-2/1 (Rev. 1) [2] on the application of defence in depth, the operating organization should verify defence in depth for internal fire hazards in-line with corresponding operational limits and conditions (See Appendix ~~A.1.~~ **I, section I.1**). Appendix I *2.22. В соответствии с целями глубокоэшелонированной защиты эксплуатирующей организации следует установить процедуры для эксплуатации средств предотвращения, защиты и смягчения последствий всех опасностей и реализовать стратегии по преодолению воздействия опасностей, чтобы гарантировать, что основные функции безопасности поддерживаются для всех состояний станции.* … *("In accordance with the objectives of defence in depth, the operating organization should establish procedures to operate the features for prevention, protection and mitigation for all hazards and implement strategies for coping with hazard impact to ensure that the fundamental safety functions are maintained for all plant states...."* *Translation by Technical officer Kaz Nagashima)*	1. The provisions of these paragraphs do not correspond to the approaches to defense in depth (DiD) specified in SSR-2/1 (rev. 1), since SSR-2/1 does not cover the concept of DiD to external and internal impacts. It is assumed that the design should take into account the loads from such impacts (see also "Considerations on the Application of the IAEA Safety Requirements for the Design of Nuclear Power Plants. IAEA-TECDOC-1791"). In addition, as specified in Annex I, Section I.1, the DiD concept (in relation to fire safety) is a separate concept not related to the approach outlined in SSR-2/1. The text needs to be revised, including the need to define the DiD for fire safety and clarify the role of means for protection against external influences in the DiD, defined in accordance with SSR-2/1. 2. 2. The link is incorrect - Appendix A.1 does not exist.	X	2.24.In accordance with Requirement 22 of IAEA SSR-2/2 (Rev. 1) [1] and Requirement 7 of IAEA SSR-2/1 (Rev. 1) [2] on the application of defence in depth, the operating organization should verify defence in depth for internal fire hazards in-line with corresponding operational limits and conditions (See Appendix I.1.).		Corrected the link to the appendix.

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
Belgium 4	14	2.24.	… should verify defence in depth for internal fire hazards in-line with corresponding operational limits and conditions (See Appendix ~~A~~I.1.).	There is no Appendix A.1; must be Appendix I.1	X			
France 3	14	2.24.	In accordance with Requirement 22 of IAEA SSR-2/2 (Rev. 1) [1] and Requirement 7 of IAEA SSR-2/1 (Rev. 1) [2] on the application of defence in depth, the operating organization should verify defence in depth for internal fire hazards in-line with corresponding operational limits and conditions (See Appendix A.1.).	Which appendix A.1 are we talking about?	X			
Indonesia 17	14	2.24.	See Appendix I or Chapter 11	As explained in comment No.57	X			
Indonesia 18	15	3.1.	The operating organization should establish a set of hazard management measures to ensure that the plant can be protected against **fire** hazard by suitable design and operational activities, including prevention and mitigation of the impact of, and coping with the consequences of **fire** hazard or credible combinations thereof, in an integrated management system.	Refer to 1.11 only for fire hazard			X	The proposed text changes by the intent by specifically addressing the fire hazard. The paragraph is intended to be global.
Turkey 3	15	3.1.	(Comment for Section 3 – Hazard Management Section 4 & 5 – Para. 4.5 & 5.5) A new paragraph should be added into Section 3 under "HAZARD MANAGEMENT" title as following: "Hazard management should include deployment strategies for operating personnel and equipment, and the procedural implementation of these strategies. Where additional personnel or equipment need to be deployed for hazard mitigation, the hazard management should specify the means of communication with external organizations and should include training and practice drills for the personnel (see Section 10)."	As stated in paragraph 2.1, in this Safety Guide the word "hazard" refers to both internal and external hazards, and to the combination of these hazards unless where specifically noted. Therefore, paragraphs 4.5 and 5.5 should be removed from existing sections, and be merged and inserted as an additional paragraph into Section 3 under "HAZARD MANAGEMENT" title.			X	The deployment of resources and communication with external organizations are details best left to the more detailed sections of this document (Sections 4 and 5). Section 3 discusses hazard management in more global and general terms.
Russian Federation 7	15	3.2.	The operating organization should utilize all available resources to cope with hazard impacts (**not foreseen in the design?)** and reduce the likelihood that these impacts would propagate, become more severe or jeopardize the fundamental safety functions.	Please clarify This proposal regarding the use of "all available resources to cope with hazard impacts and reduce the likelihood that these impacts would propagate" is correct only in relation to beyond design basis impacts, since in the case of design external and internal hazards, design means should be used, not "all available"			X	The hazards in this document include beyond design bases or design extension conditions. In these cases, design features may or may not protect or mitigate the hazards. Therefore, the use is "all available resources" is correct.
Germany 12	15	3.2.	The operating organization should be able to maintain the fundamental safety functions of the nuclear power plant during and after the impact from hazards or a credible combination of these hazards.	Editorial for better understanding	X	3.2.The operating organization should be able to maintain the fundamental safety functions of the nuclear power plant during and after the impact from individual hazards or a credible combination of these hazards. The operating organization should utilize all available resources to cope with hazard impacts and reduce the likelihood that these impacts would propagate, become more severe or jeopardize the fundamental safety functions.		Agreed with comment; modified it for clarity and made revision.
Indonesia 19	15	3.3.	3.3. In accordance with GSR Part 2 [17], defined roles and responsibilities of the personnel involved in the establishment, implementation, and administration of the hazard management are required to be identified, documented and maintained up to date in the management system. The arrangements for the delegation of authority for these responsibilities should also be documented, implemented and maintained up to date in a timely manner .	By being updated in a timely manner, the documentation is getting rid of outdated information. This greatly reduces the risk of making mistakes, sending erroneous instructions to new employees and ending up with obsolete documentation		In accordance with GSR Part 2 [17], defined roles and responsibilities of the personnel involved in the establishment, implementation, and administration of hazard management are required to be identified, documented and maintained up to date in the management system. The arrangements for the delegation of authority for these responsibilities should also be documented, implemented, and maintained up to date. Further recommendations on the management system for nuclear installations are provided in GS-G-3.5 [18].	X	The proposed additional words "in a timely manner" does not add clarity to the paragrah. Removed "the" in the sentence describing those with resonsibilities of hazard management.
Indonesia 20	15	3.4.	The operating organization should identify the organizational structures, processes, specific responsibilities, level of authority, and interfaces of personnel involved in hazard management within the organization and with **Technical Support Organization (TSO)**, if necessary. These organizations should be identified taking into account specific site challenges, plant design aspects, and regional and national governmental structure.	Synchronisation with IAEA NUCLEAR ENERGY SERIES No. NP-T-3.28 External Organisation = TSO			X	Since the TSO is part of the plant organization, and the hazard management practices are to be included with the emergency plans, the addition of the TSO in this paragrah is not necessary. See paragraph 3.6.
Indonesia 22	15	3.5.	The plant management is responsible for deploying protective measures in a timely manner when hazardous conditions are forecasted. The operating organization should identify and establish staffing levels, capabilities, and authorization of the personnel, before an event, to mitigate and cope with hazards.	Management should give competent staff the authority to deal with fire hazards	X	3.5.The plant management is responsible for deploying protective measures in a timely manner when hazardous conditions are forecasted. The operating organization should identify and establish staffing levels, capabilities of the personnel, and personnel roles and responsibilities before an event, to mitigate and cope with hazards.		Added "personnel roles and responsibilities" to clarify and add completeness to the sentence.
Indonesia 21	15	3.6.	…. plans and protocols. In these plans and protocols, the operating organization should include a combination of personnel from the various site sections or departments such as engineering, operations, maintenance, technical support, **vendor** and emergency response.	Vendor companies can give technical information which can enrich the documented plans and protocols for preventing hazards and for mitigating and coping with the impacts of hazards	X	The operating organization should establish documented plans and protocols for preventing hazards and for mitigating and coping with the impacts of hazards and their consequences and should ensure that the plant personnel is trained and qualified in these plans and protocols. In these plans and protocols, the operating organization should include a combination of personnel from the various site sections or departments such as engineering, operations, maintenance, technical support, vendor, and emergency response. The operating organization should also ensure that an adequate number of qualified staff are available at all times to operate the plant safely in operational states and abnormal conditions in case of hazards and induced effects [15].		This should be paragraph 3.6.
Indonesia 23	15	3.6.	The operating organization should also ensure that an adequate number of qualified staff are available at all times to operate the plant safely in operational states and abnormal conditions in case of fire hazard and induced effects	Refer to 1.11			X	There is no need to specifically mention fire hazards. This paragraph bounds all hazards (including fire)

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
Canada 4	16	3.10.	The incorporation of measures for hazards into the plant management programmes and processes can be based on the graded approach, in line with the risk significance of the hazards (see GSR Part 4 (Rev. 1) [19], INSAG-25 [xx], and TECDOC-1909 [xx]). Factors to be taken into consideration also include the degree of safety significance of the site specific hazards, the extent and difficulty of the efforts needed to implement a protection activity against those hazards, the number of related processes, the overlap of the processes and the resource optimization.	To improve the clarity. The graded approach in safety assessment requires the level of detail of the safety assessment to be commensurate with the magnitude of the radiation risk and the complexity of involved protective provisions to demonstrate the effectiveness of protective provisions. Incorporation of the protective measures is a decision making process involving justification of the cost-effectiveness the protective measures. This may be an iterative process supported by safety assessment and cost evaluation. INSAG-25 "Considerations on Performing Integrated Risk Informed Decision Making" (2011) and TECDOC-1909 "Consideration of Performing Integrated Risk Informed Decision Making" (2020) provide valuable guidance and may need to be referenced here.	X	3.10. The incorporation of measures for protection against hazards into the plant management programmes and processes can be based on a graded approach in line with the risk significance of the hazards (see GSR Part 4 (Rev. 1) [19]). Factors to be taken into consideration also include the degree of safety significance of the site specific hazards, the extent and difficulty of the efforts needed to implement a protection activity against those hazards, the number of related processes, the overlap of the processes, and the resource optimization.		We agree with that the documents make the paragraph more inclusive and clear, however the IAEA Safety Guide doesn't refer TECDOC and INSAG. We reflected other texts.
USA 23	16	3.10.	The incorporation of measures for protection against hazards into the plant management programmes and processes can be based on the graded approach (see GSR Part 4 (Rev. 1) [19]). Factors to be taken into consideration include the degree of safety significance of the site-specific hazards, the extent and difficulty of the efforts needed to implement a protection activity against those hazards, the number of related processes, the overlap of the processes and the resource optimization.	This para appears to address protection, so simply referring to "measures for hazards" is too vague.	X	3.10. The incorporation of measures for protection against hazards into the plant management programmes and processes can be based on a graded approach in line with the risk significance of the hazards (see GSR Part 4 (Rev. 1) [19]). Factors to be taken into consideration also include the degree of safety significance of the site specific hazards, the extent and difficulty of the efforts needed to implement a protection activity against those hazards, the number of related processes, the overlap of the processes, and the resource optimization.		Agree; text modifed.
USA 24	16	3.11.	The hazard management and the decision making for hazard management should be harmonized with the guidance and actions included in the plant emergency preparedness and response programme and the accident management programme ~~of the plant~~ for mitigating and coping with the event progress from hazard~~s~~ occurrence to a nuclear or radiological emergency.	Edited to improve clarity	X	3.11.Hazard management and the decision making for hazard management should be harmonized with the guidance and actions included in the plant emergency preparedness and response programme and the accident management programme for mitigating and coping with the event progress from hazard occurrence to a nuclear or radiological emergency. Requirements and recommendations on the preparedness for a nuclear or radiological emergency are established in GSR Part 7 [7] and GS-G-2.1 [9], and recommendations on accident management are provided in SSG-54 [8].		Agree; text modified for clarity.
Canada 5	16	3.12.	The hazard management should consider and include the process and measures required ~~procedures~~ for: – Hazard ~~The~~ prevention ~~of avoidable hazards that can affect nuclear safety;~~ – Detection of hazards; – Protection against ~~Hazard prevention, protection~~ and mitigation of the hazards ~~features and procedures for unavoidable hazards~~ or credible combinations thereof should one occur ~~that can affect nuclear safety;~~ ~~– Mitigation measures in the event that hazards or credible combinations of hazards exceed protection levels;~~ – Applicable protection or mitigation features' mission time ~~Strategies for coping with hazard impacts: the methods implemented to deal with an adverse situation for an indefinite period of time.~~	1)To improve the clarity and consistency of the discussion and consistency (see Clause 4.8) 2)The statement in the last bullet is misleading.	X	3.12.Hazard management should consider and include the processes, procedures, and measures required for: –Hazard prevention; –Detection of hazards; –Protection against and mitigation of hazards or credible combinations thereof; –Strategies for coping with hazard impacts: the methods implemented to deal with an adverse situation for an indefinite period of time.		Agree with some of the proposed text. See final writeup. The use of mission time is not applicable in this paragraph. Agree with removing the "nuclear safety" . These make the changes more achievable.
Canada 21	16	3.12.	First task of the hazard management before "*The prevention of avoidable hazards….* " should be: Identification of site-specific hazards	Identification of additional site-specific hazards should precede activities to prevent them.	X	3.12.Hazard management should consider and include the processes, procedures, and measures required for: –Hazard prevention; –Detection of hazards; –Protection against and mitigation of hazards or credible combinations thereof; –Strategies for coping with hazard impacts: the methods implemented to deal with an adverse situation for an indefinite period of time.		Agree; see re-written text.
Canada 22	16	3.12.	A clear definition of "*avoidable hazards" and "unavoidable hazards"* is deemed necessary in this document.	Undefined terminology used.	X	3.12.Hazard management should consider and include the processes, procedures, and measures required for: –Hazard prevention; –Detection of hazards; –Protection against and mitigation of hazards or credible combinations thereof; –Strategies for coping with hazard impacts: the methods implemented to deal with an adverse situation for an indefinite period of time.		Agree; see re-written text.
Germany 13	16	3.12.	- The prevention of avoidable hazards or credible combinations thereof that can affect nuclear safety;	Combinations of external hazards can be unavoidable, therefore "credible combinations thereof" need to be added.	X	3.12.Hazard management should consider and include the processes, procedures, and measures required for: –Hazard prevention; –Detection of hazards; –Protection against and mitigation of hazards or credible combinations thereof; –Strategies for coping with hazard impacts: the methods implemented to deal with an adverse situation for an indefinite period of time.		Agree with comment; added proposed text.
USA 25	16	3.12.	~~The hazard management should consider and include procedures for:~~ The hazard management program should consider and include procedures for: OR Hazard management should consider and include procedures for:	Hazard management is not countable, so do not use "the". Either refer to "the hazard management program" (program is countable) or simply "hazard management"	X	3.12.Hazard management should consider and include the processes, procedures, and measures required for: –Hazard prevention; –Detection of hazards; –Protection against and mitigation of hazards or credible combinations thereof; –Strategies for coping with hazard impacts: the methods implemented to deal with an adverse situation for an indefinite period of time.		Agree; see revised text.

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
USA 26	16	3.12.	– ~~Hazard prevention,~~ Protection and mitigation features and procedures for unavoidable hazards or credible combinations thereof that can affect nuclear safety;	Cannot prevent unavoidable hazards	X	3.12.Hazard management should consider and include the processes, procedures, and measures required for: –Hazard prevention; –Detection of hazards; –Protection against and mitigation of hazards or credible combinations thereof; –Strategies for coping with hazard impacts: the methods implemented to deal with an adverse situation for an indefinite period of time.		Agree; see revised text.
Japan 2	16	3.8.	Hazard management is required to be integrated with the nuclear and radiation safety programme ~~(See Requirement 23 of IAEA SSR-2/2 (Rev.1) [1]).~~	Requirement 23 of IAEA SSR-2/2 (Rev. 1) [1] does not state anything of hazard management, and then suggested to be deleted. Requirement 8 (Performance of safety related activities) may be preferable if it is forced to mention.	X	3.8.Hazard management is required to be integrated with the nuclear and radiation safety programme (See Requirement 8 and 23 of IAEA SSR-2/2 (Rev.1) [1]).		The text describing Requirement 23 of SSR2/2 discuses nuclear and radiation safety programme.
Indonesia 24	16	3.8.	Hazard management is required to be integrated with **the management system, configuration management, management of modifications, ageing management, and** the nuclear and radiation safety programme ~~(See Requirement 23 of IAEA SSR-2/2 (Rev.1) [1])~~	See Requirement 2, 10, 11, 14, and 23 of IAEA SSR-2/2 (Rev.1) [1] respectively)			X	To be clear, the text describing Requirement 23 of SSR2/2 should be understood in its context. All of the other programmes discussed in this proposed revision are describid within the document. Paragraph 3.9 discusses the hazard programmes need to be integrated with all of the programmes discussed in SSR2/2.
USA 27	17	3.13.	The hazard management programme should be maintained applicable and relevant to the plant throughout the entire plant lifetime. ~~The~~ Hazard management should be reviewed periodically and updated as necessary to ~~take into account~~ consider any changes in the plant state (including plant modifications~~,~~ or changes in the site characteristics), results of research and development, new scientific knowledge, lessons learned, best practices from industry operating experience. The results of this periodic review should be used to identify and implement in a timely manner any practicable design modifications ~~and changes in the arrangements for hazard management~~ or changes to the hazard management programme, including organizational arrangements, strategies and measures.	1. See above comment about countable and uncountable nouns. 2. Edited for clarity because only the first part of the long list are plant changes. 3. Edit to improve clarity and use consistent terms	X	3.13.Hazard management should be maintained applicable and relevant to the plant throughout the entire plant lifetime. Hazard management should be reviewed periodically and updated as necessary to consider any changes in the plant state, including plant modifications, changes in the site characteristics, results of research and development, new scientific knowledge, lessons learned, best practices from industry operating experience. The results of this periodic review should be used to identify and implement in a timely manner any practicable design modifications and changes to hazard management, including organizational arrangements, strategies and measures.		Agree; proposed text modified to maintain consistency with "Hazard Management" in stead of Hazard Management Programme.
Uzbekistan 2	17	3.14.	Proposed to formulate the item in the following edition: In the operational management procedures by hazards shall define the tasks and responsibilities of the operating personnel in relation to the functional tasks of external and internal organizations (e.g. law enforcement, firefighters).	Internal organizations - as the plant has its own NPP security service.	X	3.14.The operating procedures for hazard management should set out the roles, responsibilities, and tasks of the operating personnel in relation to the roles of any external organizations (e.g. law enforcement organizations, fire brigade).		Added "tasks and responsibilities" to paragraph to make clear and more inclusive.
UK 6	17	3.15.	add an extra sentence to the paragraph as follows: "These strategies should take into account the infrastructure of the region around a site, such as roads, railways, electrical grid interfaces, presence of sources of water and proximity to water ways, regional population centres and local industries, with special consideration to the infrastructure that might present hazard challenges to the site or that may itself be affected by the hazard if it is being relied upon as part of the hazard management strategy."	The strategies that are put in place for coping with hazard impacts should also take into account how that hazard could affect the infrastructure that is being relied on within the strategy.	X	3.15. Strategies for coping with hazard impact should be developed taking into account the civil infrastructure such as electric power, watering, communications, transportation, and the collections of buildings that make up communities around the plant, as a part of the hazard management. These strategies should take into account the infrastructure of the region around a site, such as roads, railways, electrical grid interfaces, presence of sources of water and proximity to water ways, regional population centres and local industries, with special consideration to the infrastructure that might present challenges to the site or that may itself be affected by the hazard if it is being relied upon as part of the hazard management strategy.		Agreed with comment; clarifies and makes more clear the intent of the paragraph.
USA 28	17	3.15.	I don't understand what this paragraph is trying to say. The first sentence seems to look at civil infrastructure as a resource/asset to use in coping strategies. But the second sentence seems to treat the same infrastructure as a hazard.		X	3.15.Strategies for coping with hazard impact should be developed taking into account the civil infrastructure such as electric power, watering, communications, transportation, and the collections of buildings that make up communities around the plant, as a part of hazard management. These strategies should take into account the infrastructure of the region around a site, such as roads, railways, electrical grid interfaces, presence of sources of water and proximity to water ways, regional population centres and local industries, with special consideration to the infrastructure that might present challenges to the site or that might itself be affected by the hazard if it is being relied upon as part of the hazard management strategy.		See rewritten text
Finland 2	17	3.16.	General comment Please consider adding The early warning protocols and the co-operation with the authority network should be planned and drilled. The function of communication with external organizations should be tested and updated periodically.	As noted elsewhere in this document, the source of the disturbance can be remote (meteorological forcing) or regional (seismic) and may damage off-site facilities, such as the electrical grid, and may have indirect, but critical impacts to the operation of the power plant. This is setting high requirements for early warning protocols and for the co-operation with the authority network. The function of communication should be tested and updated periodically.	X	3.17.The early warning protocols and the co-operation with the external authority network should be planned and drilled. The function of communication with external organizations should be tested and updated periodically by the operating organization.		Agree with comment; this will be a new paragraph located after 3.16
USA 29	17	3.16.	The hazard management programme should identify relevant external resources and organizations, such as local government, emergency services and response organizations, and the type and amount of support that these regional external organizations can provide, as well as the points of contact and methods of communication with these organizations.		X	3.16.Hazard management should identify relevant external resources and organizations, such as local government, emergency services and response organizations, and the type and amount of support that these regional external organizations can provide, as well as the points of contact and methods of communication with these organizations.		Did not incorporate "programme." Revised text to read "Hazard management."
Canada 6	17	3.17.	The operating organization should establish separate or integrated procedures for different types of hazard. These procedures should provide clear instructions to the operating personnel on actions to be implemented when required ~~if precursors and indications of hazards, and potential precursors to events resulting from hazards occur~~.	To improve the clarity			X	The proposed text revision is considered too broad. The intent of the paragraph is to provide clear criteria.
Germany 14	17	3.17.	The operating organization should establish separate or integrated procedures for different types of hazards	Editorial for clarification	X	3.18.The operating organization should establish separate (or integrated where appropriate) procedures for different types of hazards. These procedures should provide clear instructions to the operating personnel on actions to be implemented if precursors or indications of hazards are observed, or if hazard-induced initiating event precursors occur.		Agree, editorial change accepted.

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
USA 30	17	3.17.	~~The operating organization should establish separate or integrated procedures for different types of hazard. These procedures should provide clear instructions to the operating personnel on actions to be implemented if precursors and indications of hazards, and potential precursors to events resulting from hazards occur.~~ The operating organization should establish separate (or integrated where appropriate) procedures for different types of hazards. These procedures should provide clear instructions to the operating personnel on actions to be implemented if precursors or indications of hazards are observed, or if hazard-induced initiating event precursors occur.	Edited for improved clarity	X	3.18.The operating organization should establish separate (or integrated where appropriate) procedures for different types of hazards. These procedures should provide clear instructions to the operating personnel on actions to be implemented if precursors or indications of hazards are observed, or if hazard-induced initiating event precursors occur.		Agree; revised entire text for clarity
UK 7	17	3.18.	It is not clear why this paragraph is in this document, If it remains, then the paragraph needs to be clarified with the expected outcome/intent. For example: "The emergency arrangements of the operating and external organizations should ensure that special consideration is given to events where there may be a resulting hazard from either the release of radioactive material or direct radiation. The aim should be to meet the goals of emergency response given in GSR part 7.	As written, it is not clear what the intent of this paragraph is - if it is kept, then this should be clarified and reference made to GSR Part 7	X	3.19.The emergency arrangements of the operating and external organizations should ensure that special consideration is given to cases where there is a risk of radioactive releases as a consequence of an event caused by a hazard. The aim should be to meet the emergency response goals as given in GSR part 7 [7].		Added the last statement of the proposed text revision.
Canada 7	17	3.18.	… ensure that special consideration is given to cases where there is a risk of radioactive releases as consequence of an event induced ~~initiated~~ by a hazard	To improve accuracy	X	3.19.The emergency arrangements of the operating and external organizations should ensure that special consideration is given to cases where there is a risk of radioactive releases as a consequence of an event caused by a hazard. The aim should be to meet the emergency response goals as given in GSR part 7 [7].		Channged the word "induced" to changed.
Canada 8	17	3.19.	The hazard management should include provisions to ensure the safety of those personnel responsible for implementing the measures for hazard ~~prevention,~~ protection and mitigation and the strategies for coping with hazard impact.	Only risk to the personnel safety as result of occurrence of hazards needs to be considered.	X	3.20.Hazard management should include provisions to ensure the safety of those personnel responsible for implementing the measures for hazard protection, mitigation, and the strategies for coping with hazard impact. These provisions should also cover the radiation protection of the personnel of the operating organization and of external organizations operating on the plant (e.g. external firefighters). Recommendations for occupational protection of workers in a nuclear or radiological emergency is provided in GSG-7 [10].		Agree with comment. Personnel safety is not for hazard protection, but all of the actions when the hazard occurs or after. This revision provides clarificaiton.
USA 31	17	3.19.	The hazard management programme should include provisions to ensure the safety of those personnel responsible for implementing the measures for hazard prevention, protection and mitigation and the strategies for coping with hazard impact.	Countable noun thing again.	X	3.20.Hazard management should include provisions to ensure the safety of those personnel responsible for implementing the measures for hazard protection, mitigation, and the strategies for coping with hazard impact. These provisions should also cover the radiation protection of the personnel of the operating organization and of external organizations operating on the plant (e.g. external firefighters). Recommendations for occupational protection of workers in a nuclear or radiological emergency is provided in GSG-7 [10].		Did not incorporate "programme." Revised text to read "Hazard management."
Canada 9	18	3.21.	The plant management should have an understanding of how nuclear safety ~~features and features for~~ hazard ~~prevention,~~ protection or ~~and~~ mitigation features could be adversely affected by hazards, without protection or qualification, ~~taking into consideration the safety assessment and graded approach [19]~~. This includes an understanding of hazard management measures to increase the plant's resilience.	To improve the accuracy and clarity.	X	3.24.The plant management should have an understanding that certain security features of the nuclear power plant might also be adversely affected by the impact of hazards or the activation of mitigation measures.		Comment accepted but modified. Did not parts since that proposed text changes the intent of the paragraph.
Canada 10	18	3.22.	The plant management should have an understanding that ~~of~~ certain ~~the~~ security features of the nuclear power plant, ~~as these that~~ might also be adversely affected by the impact of hazards or the necessary mitigation measures once activated, without protection or qualification.	To improve the clarity.	X	3.24.The plant management should have an understanding that certain security features of the nuclear power plant might also be adversely affected by the impact of hazards or the activation of mitigation measures.		Modified the proposed revision for calrity.
ENISS 1	18	3.23.	"– *Nuclear security aspects: Hazard management should appropriately account for security aspects (cf. §1.15)* ~~*be developed in consultation with physical protection experts and should include procedures to inform security personnel of any modifications to the physical protection features and of the occurrence of any hazard to ensure the necessary operations are followed for evacuation, hazard mitigation measures and strategies for coping with hazard impact. Further guidance on nuclear security is provided in Refs. [20–23]*~~ ".	As this standard is a Safety Standard ENISS remain convinced that the areas of safety and security should not be mixed, as suggested by § 1.15. The interface between safety and security, globally covered by §1.15, seems sufficient. Therefore, the usefulness of the second bullet does not seem to be demonstrated. This proposal simplifies the statement and avoids mixing these areas.	X	–Nuclear security aspects: Hazard management should be developed in consultation with physical protection experts and should include procedures to inform security personnel of any modifications to the physical protection features and of the occurrence of any hazard to ensure required actions are implemented. Further guidance on nuclear security is provided in Refs. [20–23].		text proposed by Canada 11 is acceptable.
Canada 11	18	3.23.	– Nuclear security aspects: Hazard management should be developed in consultation with physical protection experts and should include procedures to inform security personnel of any modifications to the physical protection features and of the occurrence of any hazard to ensure required actions are implemented ~~the necessary operations are followed for evacuation, hazard mitigation measures and strategies for coping with hazard impact~~. Further guidance on nuclear security is provided in Refs. [20–23].	To improve the clarity.	X	–Nuclear security aspects: Hazard management should be developed in consultation with physical protection experts and should include procedures to inform security personnel of any modifications to the physical protection features and of the occurrence of any hazard to ensure required actions are implemented. Further guidance on nuclear security is provided in Refs. [20–23].		Agree with commen. Text revised for clarity.
Canada 12	19	3.24.	When a hazardous event has occurred or hazardous conditions have been forecasted, a hazard response procedure ~~decision making process~~ should be initiated by the operating organization to ensure the following: – Actuation of timely response level ~~A timely assessment that the response criteria for specific hazards are met~~; – The performance of time-sensitive actions and confirmation of these actions to manage the risk imposed by the hazard; – Identification of any support needed (e.g. from internal organizations, from external organizations, emergency support equipment, specialized personnel); – Maintaining the fundamental safety functions required for the corresponding ~~appropriate~~ plant condition ~~operating mode~~. – Identification of alternative actions if a specific action cannot be performed.	1) To improve the clarity 2) To utilize right terminology	X	3.26.When a hazardous event has occurred or hazardous conditions have been forecasted, a hazard response procedure should be initiated by the operating organization to ensure the following: –Actuation of a timely response level; –The performance of time-sensitive actions and confirmation of these actions to manage the risk imposed by the hazard; –Identification of any support needed (e.g. from internal organizations, from external organizations, emergency support equipment, specialized personnel); –Maintaining the fundamental safety functions required for the corresponding plant conditions. –Identification of alternative actions if a specific action cannot be performed.		Agreed with comment; comment incorporated with no changes.

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
France 4	20	4.10.	N/A	Last bullet should be removed as Appendix I does not provide recommendations for site specific or design specific internal hazards other than those listed in the above bullets	X	4.10.Appendix I is not exhaustive but provides detailed recommendations for hazard management of the following commonly considered internal hazards: –Internal fires; –Internal explosions; –Internal missiles; –Pipe breaks (including secondary consequences such as pipe whip, jet effect, flooding and pressure build up); –Internal flooding; –Dropped Load and Falling Objects and impact of these on SSCs; –Electromagnetic interference; –Release of hazardous substances inside the plant.		The last bullet was removed but the fact that it is not exhaustive is added in the top text.
Hungary 8	20	4.2.	4.2. In accordance with Requirement 10 of GSR Part 4 [19], an initial hazard analysis is required to ~~form~~ be part of the basic design phase. The occurrence frequency of internal hazards can be greatly reduced ~~prevented~~ and their effect can be mitigated to a large extent by the design and construction of engineered features. ~~This initial hazard analysis should be supplemented to take into account the operational procedures for preventing, mitigating and coping with internal hazards.~~ This initial hazard analysis should be taken into account and be used as input for the development of operating procedures for preventing, mitigating or coping with internal hazards. Site-specific aspects (especially for multi-unit or multi-source sites) are also required to be considered in the plant design against internal hazards (see Requirement 17 of SSR-2/1 (Rev. 1) [2]) and the operation of the plant (see Requirement 23 of SSR-2/2 (Rev. 1) [1]).	I think "be" is a better wording. Internal hazards usually cannot be "prevented", since most hazard source are equipment essential for the operation of the plant, what can be reduced with the right design features is the occurrence frequency. I think this proposed text has a better wording.	X	4.2.In accordance with Requirement 10 of GSR Part 4 [19], an initial hazard analysis is required to be part of the basic design phase. The occurrence frequency of internal hazards can be reduced and their effect can be mitigated to a large extent by the design and construction of engineered features. This initial hazard analysis should be supplemented to take into account the operational procedures for preventing, protecting, and mitigating and coping with internal hazards. Site-specific aspects (especially for multi-unit or multi-source sites) are also required to be considered in the plant design and safety assessment against internal hazards (see Requirement 17 of SSR-2/1 (Rev. 1) [2]), the operation of the plant (see Requirement 23 of SSR-2/2 (Rev. 1) [1]) and SSG-3 [XX].		Agreed with some modification
Canada 13	20	4.2.	This initial hazard analysis should be supplemented to take into account the operational procedures for preventing, protecting, and mitigating ~~and coping with~~ internal hazards.	To improve the consistency of the terminology application	X	4.2.In accordance with Requirement 10 of GSR Part 4 [19], an initial hazard analysis is required to be part of the basic design phase. The occurrence frequency of internal hazards can be reduced and their effect can be mitigated to a large extent by the design and construction of engineered features. This initial hazard analysis should be supplemented to take into account the operational procedures for preventing, protecting, and mitigating and coping with internal hazards. Site-specific aspects (especially for multi-unit or multi-source sites) are also required to be considered in the plant design and safety assessment against internal hazards (see Requirement 17 of SSR-2/1 (Rev. 1) [2]), the operation of the plant (see Requirement 23 of SSR-2/2 (Rev. 1) [1]) and SSG-3 [XX].		
Canada 23	20	4.2.	(Comment for 4.2 and 4.4) Suggest making reference to IAEA SSG-3 when referring to hazard analysis to be conducted for a nuclear power plant. This hazard analysis should be conducted following the recommendations of Section 6 in IAEA SSG-3.	SSG-3 discusses internal hazards as well.	X	4.2.In accordance with Requirement 10 of GSR Part 4 [19], an initial hazard analysis is required to be part of the basic design phase. The occurrence frequency of internal hazards can be reduced and their effect can be mitigated to a large extent by the design and construction of engineered features. This initial hazard analysis should be supplemented to take into account the operational procedures for preventing, protecting, and mitigating and coping with internal hazards. Site-specific aspects (especially for multi-unit or multi-source sites) are also required to be considered in the plant design and safety assessment against internal hazards (see Requirement 17 of SSR-2/1 (Rev. 1) [2]), the operation of the plant (see Requirement 23 of SSR-2/2 (Rev. 1) [1]) and SSG-3 [XX].		
Canada 14	20	4.3.	The hazard analysis and the operating procedures for preventing, protecting, and mitigating ~~and coping with~~ internal hazards should be updated …	To improve the consistency of the terminology application	X			
Russian Federation 8	20	4.4.	Further recommendations on protection against internal hazards in the design of nuclear power plants are given in SSG-64 ~~[41]~~ **[4]**.	Error, must be number [4]	X			
Germany 15	20	4.4.	The hazard analysis should consider the impact of all credible internal hazards on SSCs.	Guidance should be given (or reference to another document) on what might be considered as "credible" or not.	X			
UK 8	21	4.10.	Appendix I provides detailed recommendations for hazard management of the following commonly considered internal hazards: Internal fires; Internal explosions; Internal missiles; Pipe breaks (including secondary consequences such as pipe whip, jet effect, flooding and pressure build up); Internal flooding; Dropped Load/Falling Objects and impact of these on SSC; Radiofrequency and Electromagnetic interference; Release of hazardous substances inside the plant; Other site specific or design specific internal hazard as appropriate.	To help the reader understand the full range of potential issues associated with the given hazards, including: •Pipe breaks can have multiple effects • light loads dropped from a height could significantly damage fuel or pipework containing fluid. Drop implies that it is a failure of the cranes/ handling equipment but doesn't consider the failure of a crane/ handling equipment. The wider assessment considers the break of passive pipework, handling operations should also consider the loss of integrity of the equipment should handling operations potential initiate such an event (for example the "snagging" of the load or incorrect loading of the crane above the safe working limits – operator errors) •Horizontal movement could impact equipment/ damage fuel during handling as well Clarification that impacting loads as well as dropped loads also need to be considered	X	4.10.Appendix I is not exhaustive but provides detailed recommendations for hazard management of the following commonly considered internal hazards: –Internal fires; –Internal explosions; –Internal missiles; –Pipe breaks (including secondary consequences such as pipe whip, jet effect, flooding and pressure build up); –Internal flooding; –Dropped Load and Falling Objects and impact of these on SSCs; –Electromagnetic interference; –Release of hazardous substances inside the plant.		Comment on Pipe breaks and Heavy load drop were accepted regarding the comment. However these titles are made consistency with the heading of the current draft of DS494. Change for EMI is rejected, according to the footnote in Appendix I; If the disturbance is in the high or radio frequency ranges, it is sometimes referred to as radio frequency interference (RFI), but in the context of this document, electromagnetic interference is used as the generic term.
Indonesia 25	21	4.8.	Insertion of a new bullet: identification on equipment and tools that needed to mitigate the effect of the hazard	Beside identification, warning system, assessment, procedures, communication and personnel training to manage the hazard, the facilities should also prepare the tools and equipment to mitigate the effect of the hazard.	X			

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
Canada 15	21	4.8.	Hazard management should include the following elements that should be adapted to the specific hazard characteristics, as appropriate: – Identification of response level ~~criteria~~ commensurate with the internal hazard and the potential consequences; – Identification of appropriate warning or monitoring systems and equipment for the hazard; – Identification and assessment of the nuclear safety challenges and functional challenges caused by the hazard, e.g. specific equipment required for ~~that may need~~ protection from the hazard; – …	To improve the clarity	X	–Identification of a response level commensurate with the internal hazard and the potential consequences; –Identification of appropriate warning or monitoring systems and equipment for the hazard; –Identification and assessment of the nuclear safety challenges and functional challenges caused by the hazard, e.g. specific equipment that are required for protection from the hazard; –Development and implementation of procedures for maintenance and inspection of equipment needed to cope with and mitigate the hazard; –Development and implementation of communication standards and protocols with external organizations; –Training of personnel to ensure development of necessary skills for implementing mitigation measures. –Identification on equipment and tools that are needed to mitigate the effect of the hazard.		Agreed with some modification
Hungary 4	22	5.1.	The authority of the regulatory bodies should be extended to the non-nuclear activities in the vicinity of the site in order to limit or reduce the occurrence of human induced external hazards as much as reasonably achievable and to forbid activities that would compromise emergency measures on and in the vicinity of the site.	External human activities (industrial, agricultural and civilian e.g. transportation alike) pose threats on the nuclear facility on two levels. Firstly they are a source human induced external hazards, and secondly they can compromise the procedures and emergency measures of the licensee and external helpers, e.g.: -Agricultural activities like stubble burning may reduce visibility in the vicinity of the site interfering/obstructing evacuations or external helpers to reach the site. -Digging irrigation ditches close to the site may prevent certain vehicles to reach the site if the local infrastructure is severely damaged due to earthquakes for example -Operating hotels or camps in close vicinity of the site would increase the certain type of human induced external hazards (e.g. forest fire or parking lot fire) while putting a great burden on the local authorities during an evacuation. -Jetski-ing or motor boating close to water intake, -Etc. Overall I think while it's crucial that the licensee is prepared and protected against external hazards it also should be mentioned in the document that the member states should monitor, regulate and pay special attention to the human activities within the vicinity of the site. Without this the protective and emergency measures can be compromised without knowing about it.			X	We agree with the concern as this is consistent with the drivers for the draft standard. However, this guide is not aiming to recommend that regulatory bodies have authority over non-nuclear activities around the sites. If changes in activities around a site affects the safety of a nuclear establishments the regulatory bodies have authority over the operating organization and whether it can continue to operate the plant.
Finland 1	22	5.1.	General comment	While it is understood that this guide aims to focus on the technical aspects of the hazard management, it might be useful to give a short overview of the external hazards by referencing the key topics from e.g. SSG-9 (seismic hazards), SSG-18 (hydrological hazards); SSG-21 (volcanic hazards) already in the general chapters of the main document. This would provide useful background information for the technical staff and for the project management and would ensure that the true seriousness of potential external risks is understood. This is especially important for new member states and power companies, which may not have a good general view of the whole cycle of nuclear power production.	X	II.48. Volcanic events can present significant hazards for nuclear power plants. Phenomena associated with volcanic events that might be accomodatedd by measures for design and operation are provided in SSG-21 [XX]. To ensure that volcanism is included in hazard management, the operating organization should consider…		I agree with your opinion that it would be useful for new member countries to refer to these guides; I did not find anything in SSG-9 that is valid as a general consideration in earthquakes. In addition to meteorological hazards, SSG-18 introduces various hydrological hazards, all of which are introduced in DS498, and the guide does not add much descriptive text. It is difficult to add explanatory text to the guide, and it is not appropriate to add explanations to each phenomenon. In SSG-21, there is a general description of volcanic hazards, and we decided to add the text in Appendix II.
Indonesia 26	22	5.1.	The hazard management for protection against external hazards should be based on identification of site-specific external hazards and plant vulnerabilities. These are identified, for example, in connection with site evaluation, plant design, periodic safety reviews, evaluation of operating experience, and if applicable, the probabilistic risk assessment for external hazards. Levels of hazards more severe than those considered in the design (**including climate change**) and **extreme hazards** should also be considered in the hazard management as an interface with accident management, based on the evaluation of the impact of these hazards. IAEA DS498 [5] and DS490 [6] provide general recommendations on the design aspects of external hazards including hazard analysis.	With increasing global surface temperatures, the possibility of more droughts and increased intensity of storms will likely occur. As more water vapor is evaporated into the atmosphere it becomes fuel for more powerful storms to develop. More heat in the atmosphere and warmer ocean surface temperatures can lead to increased wind speeds in tropical storms. Rising sea levels expose higher locations not usually subjected to the power of the sea and to the erosive forces of waves and currents. (https://www.usgs.gov/faqs/how-can-climate-change-affect-natural-disasters-1?qt-news_science_products=0#qt-news_science_products) It is necessary to consider extreme hazards as lesson learned from Fukushima Accident.	X	7.9 … SSG-18 provides the guidance for the periodical update on climate change information [XX]….		Both the two points suggested are already covered. "Extreme hazards" are described throughout as "hazards more severe than those considered in initial design". The "climate change" aspects are to be considered in the periodic review aspects of the approach to operational hazards management. It is also true that climate change considerations must be taken into account in siting and design as well. It is therefore only recommended here that any changes be taken into account in the review, including infrastructure, as described in 3.13. Detailed guidance on climate change is provided in SSG-18, and SSG-18 has been cited in this revision.
USA 32	22	5.1.	~~The~~ Hazard management for protection against external hazards should be based on identification of site-specific external hazards and plant vulnerabilities.	Countable noun thing again.	X			
USA 33	22	5.1.	These are identified, for example, in connection with site evaluation, plant design, periodic safety reviews, evaluation of operating experience, and if applicable, ~~the~~ probabilistic risk assessment(s) for external hazards.	Usually PRAs are performed separately for individual external hazards (e.g. seismic PRA, external flooding PRA, high winds PRA)	X			
USA 34	22	5.2.	~~Based on the external hazard impacts included in the hazard management, potential measures for hazard protection and mitigation should be identified for each hazard that can increase the viability of a strategy for coping with external hazards.~~ Based on the external hazard impacts considered in the hazard management programme, potential measures for protection and mitigation should be identified for each hazard that can increase the viability of a coping strategy for that external hazard's impact(s).	Edited to improve clarity	X	5.2.Based on the external hazard impacts on hazard management, potential measures for protection and mitigation should be identified for each hazard that can increase the viability of a strategy for coping with external hazards. See para 7.1 on the periodic monitoring of external hazards.		Further editing down suggested for clarity.
Russian Federation 9	22	5.3.	Before activating the established processes and procedures for protection against potential hazards, the operating organization should put in place processes and procedures to ensure that meteorological forecasts are monitored and that appropriate actions are taken in due time when weather-related hazardous conditions are forecasted …	Please specify what is the reason for this sequence? Processes and procedures for protection against potential hazards can be activated simultaneously with the start of weather forecasts and monitoring (for example, during siting or construction).			X	"Before activating..." is intended to imply it is part of establishing the intended process of monitoring weather forecasts. It is depending on the hazard, however, the recommendations are applicable to all plant conditions, not only DEC, and the paragraph should be left as they are. The sentence was modified by comments from other member states.

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
UK 9	22	5.3.	Suggest adding: "In order to reflect the sensitivities of local conditions, site operators should be encouraged to record and maintain on-site meteorological and water level data to provide enhanced prediction and forecasting at a local level." In addition: Footnote 6 should read (suggest last word is changed from probability to confidence: : 'The basis of a valid forecast or prediction is formed by facts that are collected using formalized methods and forecast technologies to create data. Resulting predictions are available from national and regional organizations which are specialized in their production and provision. On-site monitoring can support the information. On this basis decisions then can be made with a certain confidence probability."	For the suggested tect: National forecasting provides a good regional overview, but site-specific observations are essential to capture local trends and anomalies.	X	5.3.Prior to establishing processes and procedures for protection against potential hazards, the operating organization should also put in place processes and procedures to ensure that meteorological forecasts are monitored and that appropriate actions are taken in due time when weather-related hazardous conditions are forecasted (e.g. coastal flooding, severe storms, tornadoes). For predictable or partially predictable hazards , the operating organization should undertake the decision making process described in para. 3.26. to ensure that the site is prepared in a timely manner. In order to reflect the sensitivities of local conditions, the operating organization should be encouraged to record and maintain on-site meteorological and water level data to provide enhanced prediction and forecasting at a local level. The basis of a valid forecast or prediction is formed by facts that are collected using formalized methods and forecast technologies to create data. Resulting predictions are available from national and regional organizations which are specialized in their production and provision. On-site monitoring can support the information. On this basis decisions then can be made with a certain confidence.		
USA 35	22	5.3.	~~Before activating the established processes and procedures for protection against potential hazards, the operating organization should put in place processes and procedures to ensure that meteorological forecasts are monitored and that appropriate actions are taken in due time when weather related hazardous conditions are forecasted (e.g., coastal flooding, severe storms, tornadoes).~~ The operating organization should put in place processes and procedures to ensure that meteorological forecasts are monitored and that appropriate actions (e.g., established processes and procedures for protection against potential hazards), are taken in due time when weather-related hazardous conditions are forecasted (e.g., coastal flooding, severe storms, tornadoes).	Edited to improve clarity	X	5.3.Prior to establishing processes and procedures for protection against potential hazards, the operating organization should also put in place processes and procedures to ensure that meteorological forecasts are monitored and that appropriate actions are taken in due time when weather-related hazardous conditions are forecasted (e.g. coastal flooding, severe storms, tornadoes). For predictable or partially predictable hazards , the operating organization should undertake the decision making process described in para. 3.25. to ensure that the site is prepared in a timely manner. In order to reflect the sensitivities of local conditions, the operating organization should be encouraged to record and maintain on-site meteorological and water level data to provide enhanced prediction and forecasting at a local level.		Agree that existing text is potentially confusing but to fit into surrounding paragraphs and other MS comments, the alternative edit was suggested:
USA 36	22	5.4.	This paragraph is not specific to external hazards. It belongs in Section 3 (or maybe Section 2)				X	The choice to place this guidance here is because contact with external agencies considering events at site area is of particular relevance to external hazards so Section 5 is viewed as a better fit than Sections 2 or 3. General recommendations such as the identification of role and means of communication for external organizations are covered in Chapter 3, and matters relating to the delay of external firefighters in the event of an internal fire, etc., are covered in the Appendix, so the current structure is acceptable.
USA 37	23	5.5.	This paragraph is not specific to external hazards. It belongs in Section 3 (or maybe Section 2)				X	Comments are understandable. However, as the same recommendations are given in paragraph 4.5 and recommendations for liaising with external organisations are added in 4.5, as internal hazards are generally dealt with by internal organisations. Therefore, we do not see any need to change the current structure.
USA 38	23	5.6.	This paragraph is not specific to external hazards. It belongs in Section 3 (or maybe Section 2)				X	See comment on USA 37. Para 4.6 is the similar recommendations but the "prevention" is not appricable fo r external hazard.
UK 11	23	5.7.	Hazard management for external hazards should include the following elements that should be adapted to the specific hazard characteristics and especially the predictability of the hazard: Identification of a realistic predictability or warning time for the hazard, and response criteria commensurate with the external hazards identified and the potential consequences; Identification of appropriate warning or monitoring systems and equipment for the hazard; Identification and assessment of the nuclear safety challenges and the functional risk caused by the hazard (e.g. specific equipment that might need to be protected against the hazard); Development and implementation of an operational strategy for responding to events with warning (e.g. procedures to support anticipatory actions) taking into consideration the seasonal patterns of frequency and/or magnitude of certain natural external hazards; Development and implementation of procedures for maintenance and inspection of equipment needed to cope with and mitigate the hazard and post hazard demonstration of the functional capability of SSCs; Development and implementation of a plant strategy for responding to events without warning (e.g. response actions for a specific hazard such as debris removal following a seismic event); Development and implementation of communication protocols with external organizations; Training of personnel to ensure development of the necessary skills for implementing mitigation measures	Arrangements should extend to the ability to reinstate SSCs to service; this is especially pertinent after low magnitude hazards which could erode or undermine the functional capability of SSCs, for example a storm event.	x	–Identification and assessment of the potential challenges to the fundamental safety functions caused by the hazard (e.g. specific equipment that might need to be protected against the hazard);		
Canada 16	23	5.7.	– Identification and assessment of the potential challenges to the safety functions ~~nuclear safety challenges and the functional risk~~ caused by the hazard (e.g. specific equipment that might need to be protected against the hazard);	To improve the clarity	X	–Identification and assessment of the potential challenges to the fundamental safety functions caused by the hazard (e.g. specific equipment that might need to be protected against the hazard);		
Hungary 9	23	5.8.	The operating organization should establish operating procedures that describe actions before, during and after the event corresponding to each external hazard, including any preparatory actions before the hazard impacts the site, as appropriate. The operating organization should define and take into account all additional hazards that have a causal relation or otherwise correlated occurrence probability with the ~~can be generated by~~ an original hazard~~, and also define credible combinations of hazards~~ (see Section 6).	I think this is a better wording for the recommendation.			X	The original text is in contradiction with the text of section 6 of this Draft Standard.

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
Hungary 10	24	5.10.	While there is a wide range in the capability to forecast external hazards~~.~~ some ~~Some~~ external hazards such as seismic events, aircraft crashes, and industrial accidents are generally unpredictable and the hazard management should assume that in such cases there will be no warning.	I think this is a better wording. These sentences should be interpreted together therefore I believe it is better to put them into once sentence.			X	Linking the first sentence to the second would be OK, but the first sentence also acts as an introduction the remainder of the paragraph. The proposed text adds no value and increases the complexity of the text.
Germany 16	24	5.11.	Depending on the predictability of the external hazard (including combined ones) and the communications …	Addition to clarify that there can be also differences in the predictability of combinations of an external hazard with any other external or internal hazard)	X			
Japan 4	24	5.12.	Depending on the expected severity of the external hazards and the available time, the ~~operating organization~~ plant management should consider evacuating all non-essential plant personnel within correctly estimated evacuation time.	Suggested to make clear that it will be responsible to undertake the activities to assure safety of plant personnel.			X	See Japan 3.
Finland 3	24	5.13.	After the cancellation of a national or regional hazard warning, the operating organization should take actions to return the plant to operational states and ensure that if any personnel were temporarily assigned to coping with hazards, they return to their normal duties in a controlled manner.	Something seems to be missing.	X	5.13.After the cancellation of a national or regional hazard warning, the operating organization should take any necessary actions to return the plant to operational states including, as appropriate, inspection and remedial actions to ensure sufficient protection is reinstated. This includes returning any personnel temporarily assigned to coping with the potential hazard to their normal duties in a controlled manner.		
UK 10	24	5.13.	After the cancellation of a national or regional hazard warning, the operating organization should take any necessary actions to return the plant to operational states including, as appropriate, inspection and remedial actions to ensure sufficient protection is reinstated. This includes returning any personnel temporarily assigned to coping with the potential hazard returning to their normal duties in a controlled manner.		X	5.13.After the cancellation of a national or regional hazard warning, the operating organization should take any necessary actions to return the plant to operational states including, as appropriate, inspection and remedial actions to ensure sufficient protection is reinstated. This includes returning any personnel temporarily assigned to coping with the potential hazard to their normal duties in a controlled manner.		
Indonesia 27	24	5.9.	The operating organization should ~~take action~~ prevent or mitigate the propagation of hazard effects throughout the entire site before (for a forecasted event) or during the event for an external hazard that impacts a vulnerable or sensitive part of the site. This **action** includes ensuring site access routes are available and useable or providing alternative means of site access (e.g., boat or helicopter) if the hazard impacts the site access routes. Adverse working conditions of the operating personnel because of the hazard should be considered when developing the operating procedures for hazard management. The safety of the operating personnel should be taken into account, particularly during an event.	Unnecessary take action put into this paragraph Consider writing in active position, Adding action to refer previous sentence, as clear antecedent	X	5.9.The operating organization should take actions to prevent or mitigate the propagation of hazard effects throughout the entire site before (for a forecasted event) or during the event for an external hazard that impacts a vulnerable or sensitive part of the site. These actions include ensuring site access routes are available and useable or providing alternative means of site access (e.g. by boat or helicopter) if the site access routes are impacted by the hazard. For ensuring this, effective communication and notification protocols with external organizations should be established by the operating organization. Adverse working conditions of the operating personnel because of the hazard should be taken into consideration when developing the operating procedures for hazard management. The safety of the operating personnel should be taken into account, particularly during an event.		Reject deletion from opening sentence, but action should be plural. Agree with changing the start of the second sentence accordingly. Also edits from another MS.
Turkey 4	24	5.9.	The following sentence “Effective communication and notification protocols with external organizations should be established by the operating organization for ensuring site access routes are available and useable or providing alternative means of site access.” should be added into paragraph 5.9 after the sentence “This includes ensuring site access routes…”.	Communication and notification protocols with external organizations should also be considered with respect to the availability of site access routes and/or providing alternative routes.	X	5.9.The operating organization should take actions to prevent or mitigate the propagation of hazard effects throughout the entire site before (for a forecasted event) or during the event for an external hazard that impacts a vulnerable or sensitive part of the site. These actions include ensuring site access routes are available and useable or providing alternative means of site access (e.g. by boat or helicopter) if the site access routes are impacted by the hazard. For ensuring this, effective communication and notification protocols with external organizations should be established by the operating organization. Adverse working conditions of the operating personnel because of the hazard should be taken into consideration when developing the operating procedures for hazard management. The safety of the operating personnel should be taken into account, particularly during an event.		Incorporated along with comment from another MS.
Canada 19	25	5.12.	5.12 Depending on the expected severity of the external hazards and the available time, the operating organization should consider evacuating all non-essential plant personnel within ~~correctly~~ estimated evacuation time.	It may require extensive effort to demonstrate evacuation time is estimated “correctly”. It is also open to different interpretations by the utilities and regulators. Also use of the word “correctly” is superfluous.	X	5.12.Depending on the expected severity of the external hazards and the available time, the operating organisation should consider evacuating all non-essential plant personnel within the estimated evacuation time.		Suggest "the" to replace "correctly"
Russian Federation 10	25	5.14.	Recommendations provided in paragraphs 5.1 – 5.13 are applied to all external hazards. Appendix II covers more detailed recommendations that should be included into the management system for protection against external hazards such as: Seismic hazards; External floods (storm surges and tsunamis); External floods (flooding of rivers and streams, and floods due to extreme precipitation events); Extreme winds; Other extreme meteorological conditions; Volcanism; Deformations of problematic (swelling, collapsing and other) soils in bases of constructions; External fires; External explosions; Toxic, radioactive, flammable, corrosive or asphyxiant chemicals, and their air and liquid mixtures; Aircraft crash; Electromagnetic interferences, including solar storms; Biological phenomena; Hazards by floating objects and hazardous liquid on water intakes and components of the ultimate heat sink; Other site specific or design specific external hazards as appropriate.	Problematic soils exert influence on NPP constructions during the whole life-cycle of a construction. Physical, deformational and strength factors of such soils are able to change chaotically in the soil in-situ, both in vertical and horizontal directions. Consequently, problematic soils during their use may cause differential settlement of foundation of buildings and constructions. For example, in the process of creation of a construction pit, swelling soils embedded under the pit bottom would change (for the worse) their physical, deformational and strength properties. Preliminary prognosis of a slump and rolling of a construction foundation on swelling soils would become difficult or just impossible.			X	The operational provisions need to be consistent with the design aspects described in DS498. The “soil” is considered in DS498 in some aspects, however, problematic soil is not regarded as one category of the external hazard and we couldn’t find any additional recommendation for problematic soils. In addition, the comment doesn’t identify any operational aspects. “Problematic soil” was not identified in DPP, and this hazard is specific hazards in limited sites. This Safety Guide is aiming to provide recommendations for hazards which is common in most nuclear power plants. Therefore, we won't reflect this hazard.
Israel 2-1	25	5.14.	We would like to suggest to appropriately emphasize in these (or other relevant) paragraphs the hazards and the required hazards management related to radioactive (and other dangerous) gases and liquids released inadvertently from neighboring nuclear installations, such as multi-unit plant sites or adjacent sites.	Completeness	X	Bullet modified to : – Toxic, radioactive, flammable, corrosive or asphyxiant chemicals, and their air and liquid mixtures; including inadvertent releases from neighbouring nuclear installations or from other plant on multi-unit plant sites		

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France 5	25	5.14.	N/A	Last bullet should be removed as Appendix II does not provide recommendations for site specific or design specific external hazards other than those listed in the above bullets	X	5.14.For all external hazards, the recommendations provided in sections 5.1–5.13 are applicable. Appendix II is not exhaustive but provides more detailed recommendations that should be incorporated into hazard management for protection against external hazards for the following common external hazards: –Seismic hazards; –External floods (storm surges and tsunamis); –External floods (flooding of rivers and streams, and floods due to extreme precipitation events); –Extreme winds; –Other extreme meteorological conditions; –Volcanism; –External fires; –External explosions; –Hazardous substances (toxic, radioactive, flammable, corrosive or asphyxiant chemicals, and their air and liquid mixtures, including inadvertent releases from neighboring nuclear installations or from other plants on multi-unit plant sites); –Aircraft crash; –Electromagnetic interferences, including solar storms; –Biological phenomena; –Hazards by floating objects and hazardous liquid on water intakes and components of the ultimate heat sink;		The last bullet was removed but the fact that it is not exhaustive is added in the top text.
Indonesia 28	25	5.14.	**- Toxic, radioactive, flammable, explosive, corrosive or asphyxiant chemicals, and their air and liquid mixtures;** **- high pressure vessel;** **- external missiles;**	There could be some explosive materials around NPP plant, such as TNT or ammonium nitrate, owned by chemical industry or used in mining activity. There could be a high-pressure storage around NPP plant. For example, ammonia vessel, etc. These vessels will send missiles if exploded. There could be an explosion event around and will send missiles to the site.			X	The concern, about chemical explosions or missiles from neighbouring industrial activity is covered within the existing text. The original text is in contradiction with the text of section 6 of this Draft Standard. The proposed revision causes duplication or structural problem. The proposed recommendation is already expressed with other words in other paras.
Germany 2	26	6.1.	Please add again the deleted Appendix on Combinations of Hazards with the proposed changes in Step 7.	It is not clear why the whole Appendix on Combinations of Hazards was deleted. IAEA SSG-64 and DS498 provide only guidance on the design against hazard combinations, operational aspects should be also covered, and this is the only guide on protection against hazards in the operation of NPPs.			X	We understood the comment but this comment is rejected. The internal discussion identified that the most of description in the original draft "Appendix C" on the hazard combination was duplicated with SSG-64. Combination category in DS503 cannot be inconsistent with SSG-64, and be cited in Section 6 because SSG-64 can give enough guides how to combine hazards. In addition, recommendation common for each category should be moved from Appendix C to main body of Section 6. Some experts identified that inserted pictures gave wrong intention that the guide described how to combine hazards exhaustively. The original Appendix C and some texts gave impression to cover the responsibility which achieved in design and assessment stages. Therefore, to avoid these confusion and conflict with other guide for siting, design, safety assessment, the IAEA removed the appendix. When we remove the appendix, some of various operational aspects were moved to the main body or Appendix I and II. As a result, technical contents haven't lost at all.
Hungary 11	26	6.2.	Any consequential effects from all credible hazard combinations of external-external, external-internal, internal-internal events, ~~including unrelated combinations.~~ as defined by plant design and applicable regulations, should be considered in the hazard management.	I think this part of the sentence is unnecessary and also rarely true. Unrelated (non-causal, non-correlated) hazard combinations are usually not a threat and even if they are they are included in the "credible combinations" part. To emphasize this the term "all" should be added before "credible combinations" as indicated in the proposal.			X	It is true that unrelated (non-causal, non-correlated) hazard combinations are usually not a threat. However, any consequential effects from unrelated hazard combinations should be considered in the hazard management. what the operating organization should do in unrelated (non-causal, non-correlated) hazard case is stated in paragraph 6.6 .
USA 39	26	6.3.	This guidance in this paragraph is not really specific to hazard combinations. It is more general. Consider moving this to section 2		X	3.20.Hazard management should be performance-based and define a desired outcome and clear, measurable criteria to determine whether that outcome has been reached [4]. This Safety Guide provides recommendations on developing performance-based measures for hazard management. 6.3.This Safety Guide provides recommendations on developing performance-based measures for hazard combinations, but does not prescribe steps for each specific combination, nor on how to combine hazards.		Agree with comment; parapgraph should be moved to Section 3, after paragraph 3.19.
Russian Federation 11	26	6.4.	The goal of hazard management should be to ensure that the plant can withstand **(the safety of plant shall be provided, while a number of elements can be destroyed (or fail))** the impact of any credible combination of hazards and their effects.	Text improvement (it is not defined what is meant by the concept of "**withstand** the impact of any credible combination of hazards" - to what extent this should be ensured).			X	It is clear that the "fundamental safety functions" are mentioned in this document, along with the Defense In Depth statements. We beleve that it would be redundant to include a supplimentary text to the word " withstand" here because combinations of hazards is a clear case where the use of fundamental safety functions and DID should be the highest priority.
Russian Federation 12	26	6.5.	Operating procedures for separate hazards ~~**could**~~ **shouldn't** contain conflicting instructions that might lead to confusion if the hazards occur in combination. For example, hazard mitigation equipment for a certain hazard **should** ~~**may**~~ be stored in an area that is **not** affected by another hazard ~~**and then the equipment cannot be used for its original purpose**~~ **so equipment can be used in cases than both hazards already occurred.**	It looks like some kind of assumptions. It needs rewriting	X	6.5.The operating organization should review the applicability of operating procedures and deployment of the necessary mitigation equipment for each individual hazard taking into account the potential effects of the combinations of hazards applicable at the site. Operating procedures for separate hazards should not contain conflicting instructions that might lead to confusion if the hazards were to occur in combination. For example, hazard mitigation equipment for a certain hazard should be stored in an area that is affected by another hazard so equipment can be used in cases than both hazards already occurred.		Agree.Each paragraph should state what it should be, rather than suggesting a possibility

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Hungary 12	26	6.5.	The operating organization should review the applicability of operating procedures and deployment of the necessary mitigation equipment for each individual hazard taking into account the potential effects of the combinations of hazards applicable at the site. Operating procedures for separate hazards could contain conflicting instructions that might lead to confusion if the hazards were to occur in combination or if they occur with a few hours/days of delay some resources named in both procedures may be already depleted or greatly reduced for the time of occurrence of the second hazard event. For example, hazard mitigation equipment for a certain hazard may be stored in an area that is affected by another hazard and then the equipment cannot be used for its original purpose, or in the case of a coastal facility an earthquake causing LOOP may deplete the diesel fuel by the time a causal tsunami will hit the site and therefore prevent the use of these resources for the mitigation of the second event.	I believe this "time delayed occurrence with reduced or depleted resources" should be mentioned in the document. Its an interesting and important topic in the field of hazard combinations and pose a risk to the facilities that should be taken into consideration.			X	For the first part of the proposal, delayed occurrence is mensitoned in 6.10. We should avoid the duplication. For the second part of the proposal, the proposed example is correct. However, you can give many examples applicable to inland plants, such as internal fire and internal flood or toxic gases etc. In order to avoid misleading or narrowing the view of readers, we would like to simply give the recommendations here.
Indonesia 29	26	6.5.	The operating organization should review the applicability of operating procedures and deployment of the necessary mitigation equipment for each individual hazard taking into account the potential effects of the combinations of hazards applicable at the site. ~~Operating procedures for separate hazards could contain conflicting instructions that might lead to confusion if the hazards were to occur in combination.~~ **Operating procedures should contain work instructions that anticipate a separate hazard coinciding. These instructions are made easy to understand and do not conflict with each other, confusing if hazards were to occur in combination for each separate event.** For example, hazard mitigation equipment for a certain hazard may be stored in an area that is affected by another hazard and then the equipment cannot be used for its original purpose.		X	6.5.The operating organization should review the applicability of operating procedures and deployment of the necessary mitigation equipment for each individual hazard taking into account the potential effects of the combinations of hazards applicable at the site. Operating procedures for separate hazards should not contain conflicting instructions that might lead to confusion if the hazards were to occur in combination. For example, hazard mitigation equipment for a certain hazard should be stored in an area that is affected by another hazard so equipment can be used in cases than both hazards already occurred.		See re-written text.
UK 12	26	6.5.	The operating organization should review the applicability of operating procedures and deployment of the necessary mitigation equipment for each individual hazard taking into account the potential effects of the combinations of hazards applicable at the site. Operating procedures for separate hazards could contain conflicting instructions that might lead to confusion if the hazards were to occur in combination. For example, hazard mitigation equipment for a certain hazard may be stored in an area that is affected by another hazard and then the equipment cannot be used for its original purpose. Care should be taken when discounting hazard combinations based on frequency. Whilst two phenomena may be discounted on a frequency basis at their extreme magnitude, a combination of less extreme events may still pose a risk to critical structures and mitigation measures. Where joint probability curves have been generated for hazard combinations it should also be recognized that the most challenging design basis threat may not necessarily occur at the extreme of either hazard magnitude, but in reality the most challenging combination may arise within the spectrum of credible events.	The draft does not recognize the risk of screening/discounting hazard combinations based on combining extreme events (i.e. two 10-4 pa events combined not being credible when the 10-2 pa events combined would pose an issue).			X	We understood the comment. It is a reasonable practice to carry out the proposed probabilistic assessment to screen the credible combination, but we believe that this is the scope of other Safety Standards and outside the scope of the DPP. Also, although it could be included as an example, the Guide does not state "how it should be combined", as stated in 6.3, and leaves this to guides such as SSG-64 and other guides on safety assessment such as SSG-3. These guides are referred from section 4 and 5 respectively.
Japan 5	26	6.6.	If a combined hazard event occurs that has not been anticipated in the safety assessment, then the precautionary conservative decision-making principles should apply (see para. 3.24). For reactors that are in operation at the time of occurrence of the combined hazard, shutdown or power reduction should be considered by the ~~operating organization~~ plant management. The operating personnel should then follow the site accident management programme in accordance with the requirements XX in IAEA SSR-2/2 (Rev. 1) [1], and the recommendations SSG-54 [8].	(Reason-1) Change of operating mode is one of functions of management who has responsible for. Furthermore, actions b operating personnel is described in following sentence. Lines of authority should be clearly sated here. (Reason-2) Please clarify which requirement should be described here as do in other paragraphs in this draft publication.	X	6.6.If a combined hazard event occurs that has not been anticipated in the safety assessment, then the precautionary conservative decision-making principles should apply (see para. 3.26). For reactors that are in operation at the time of occurrence of the combined hazard, shutdown or power reduction should be considered by the operating organization. The operating personnel should then follow the site accident management programme in accordance with Requirement 18 in IAEA SSR-2/2 (Rev. 1) [1], and the recommendations provided in SSG-54 [8]. For example, anticipation and consideration for a combination of hazards categorized as unrelated (independent) events [4] might not be recommended unless the combination of events is shown to have a sufficient probability [5]. The operating organization should maintain situational awareness when responding to those unrelated events and use judgment to ensure the fundamental safety functions based on the performance of response organizations and the conditions in which they are operating at the time of response.		(Reason-1) The proposed text was rejected for the same reason as a comment for 3.24. Plant managemnt is part of the operating organization. Decsion making for the issue discussed in this paragraph may be made be a number of organizations/people anywhere in the entire operating organization. Therefore, isolating plant management to make the decisions may not be correct. Even if the comments were intended to clarify the responsible organization, the requirement and recommendation for role and responsibility on decision making are already established in GSR Part 2 and NS-G-2,4 (DS497C) (Reason-2) Agree. See re-written text.
Indonesia 31	27	6.10.	The plant personnel ~~response~~ **responsible** for these cases can be based not only on the response criteria for both individual hazards but on specific management measures that relate to a combination of these hazards.	Response replaced by responsible trainings			X	The meaning of the proposed text is different from original text. The subject of this text is "The plant personnel response ", not "The plant personnel".
Indonesia 30	27	6.6.	If a combined hazard event occurs that has not been anticipated in the safety assessment, then the precautionary conservative decision-making principles should apply (see para. 3.24). For reactors that are in operation at the time of occurrence of the combined hazard, shutdown or power reduction should be considered by the operating organization. The operating personnel should then follow the site accident management programme in accordance with the requirements in IAEA SSR-2/2 (Rev. 1) [1] and the recommendations SSG-54 [8]. For example, anticipation and consideration for a combination of hazards categorized as unrelated (independent) events [4] might not be recommended unless the combination of events is shown to have a sufficient probability [5]. The operating organization should maintain situational awareness when responding to those unrelated events and use judgment to ensure the fundamental safety functions based on the performance of response organizations and the conditions in which they are operating at the time of response.				X	We use "programme" instead of "program" in line with IAEA Safety Glossary 2018. In the IAEA Safety Standard, British English is to be used.

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Russian Federation 13	27	6.8.	… If there are multiple hazards, there might be more organizations involved in the response with different roles and responsibilities. ~~**These roles and responsibilities could be overlapping or even be conflicting with each other**~~. **It should be envisaged and assessed that these roles and responsibilities do not overlap or conflict with each other.**	The text of the safety guide should contain instructions on how to do it right, but not suggestion what might go wrong.	X	6.8.Communication protocols with internal or external organizations might need to take hazard combinations into account. These communication protocols should be developed considering the effects of hazard combinations based on specific plant conditions. For example, different external organizations might need to be involved for certain hazards. If there are multiple hazards, there might be more organizations involved in the response with different roles and responsibilities. It should be envisaged and assessed that these roles and responsibilities do not overlap or conflict with each other.		Agree.Each paragraph should state what it should be, rather than suggesting a possibility
Canada 17	27	6.9.	The risk-informed ~~performance-based~~ approach ~~for hazard combinations~~ should be developed using a systematic process to identify and categorize credible hazard combinations, and define protection and mitigation measures ~~and should then screen the hazard mitigation measures and strategies for coping with hazard impact on the basis of the significance of effects on the plant and the frequency of occurrence~~.	To improve clarity	X	6.9.The performance-based approach should be developed using a systematic process to identify and categorize hazard combinations, and should then screen the hazard mitigation measures and strategies for coping with hazard impact on the basis of the significance of effects on the plant and the frequency of occurrence. IAEA SSG-64 [4] provides three categories of hazard combination: consequent (subsequent) events, correlated events and unrelated (independent) events. For example, the hazard mitigation measures and coping strategies for hazards that rise from consequent events should receive more special attention, than hazards that rise from independent events.		To use the word "performance-based" was rejected because it seems more global than "risk-informed". We agree to delete the words "for hazard combinations " because original text is redundant. The word "credible" was rejected because any consequential effects from unrelated hazard combinations should be considered in the hazard management. We reject to delete last desctiption and insert propesed text because it changes the original text's meening.
Indonesia 33	28	7.1.	Continuous periodic monitoring of external hazards should be considered, ~~especially at the early stage of the~~ **throughout** lifetime of the plant.	Monitoring should be performed throughout lifetime of the plant.	X			
USA 40	28	7.1.	Continuous or frequent periodic monitoring of external hazards should be considered, especially at the early stage of the lifetime of the plant.	Monitoring can be continuous or periodic, but not both	X			
Russian Federation 14	28	7.2.	- … - If there is a reassessment of the severity of **an initially considered** hazards or the plant **ability to withstand this** hazard in the specific stage of plant life; - … - ~~**If the severity of a hazard or the plant vulnerability to a hazard was not previously recognized;**~~ - If new or updated information for a site-specific event shows that the current design basis and design assumptions for hazard mitigation measures or strategies might be inadequate…	Elimination of duplicate provisions.	X			
Hungary 13	28	7.2.	The method for hazard analysis and the development of hazard management should be consistent with the plant design ~~bases~~ basis and the design assumptions. The hazard management should be reviewed and updated in the following cases: – If additional hazards or hazard combinations are identified; – If there is a reassessment of the severity of hazards in the specific stage of plant life; – As part of a re-licensing application – As part of a Periodic Safety Review [16]; ~~– If the severity of a hazard or the plant vulnerability to a hazard was not previously recognized;~~ – If new or updated information for a site-specific event shows that the current design basis and design assumptions for hazard mitigation measures or strategies might be inadequate, including cliff edge effects or challenges to multiple layers of defence in depth that were not previously identified or addressed	I think the term “design bases” is a typo, it should be “design basis” New hazard combinations could be identified even if no additional hazard has been identified, so I believe it should be noted in the paragraph. I think this part is a duplication of the requirement stated in the last point.	X	7.2.The method for hazard analysis and the development of hazard management should be consistent with the plant design bases and the design assumptions. - Hazard management should be reviewed and updated in the following cases: –If additional hazards or hazard combinations are identified; –If there is a reassessment of the severity of an initially considered hazards or the ability to withstand this hazard in the specific stage of plant life; –As part of a re-licensing application –As part of a Periodic Safety Review described in SSG-25 [16]; –If new or updated information for a site-specific event shows that the current design basis and design assumptions for hazard mitigation measures or strategies might be inadequate, including cliff edge effects or challenges to multiple layers of defence in depth that were not previously identified or addressed.		"Bases" is correct as in this case since there will be more than one design basis; hence "bases".
ENISS 4	28	7.2.	The method for hazard … – As part of a Periodic Safety Review as described in SSG-25 [16]; …	In general, in the document when referencing an IAEA document both a reference in the form [xx] is made and a reference to the document number is made. At this place the reference is limited to a reference in the form [xx].	X			
Indonesia 32	28	7.2.	An update of hazard management should include harmonization with other programmes at the plant site, such as monitoring programmes or emergency preparedness programmes. **For emergency preparedness programmes, hazard analysis plays an important role in the development and review of accident management guidelines, if applicable.**	Adding a new sentence to explain in more detail, the purposes of the periodic updating for emergency preparedness programmes.			X	The proposed text seems general explanation. In addition, emergency preparedness programmes and accident management programmes are covered in section 2 and section 3. Duplication was avoided.
Hungary 14	28	7.6.	In the periodic updating of hazard management the ~~The~~ operating organization should consider and address~~, in the periodic updating of hazard management,~~ SSCs important for hazard prevention, protection and mitigation including portable emergency equipment and passive design features. The effect of ageing of SSCs should also be taken into account.	I believe the proposed sentence structure is better.	X			
Hungary 16	29	7.10.	7.10. Modifications in the nuclear power plant design and/or operation during its lifetime (with regard to both equipment and organization) should be reflected in hazard management. Hazard management should be reviewed and updated following any plant modification that affects or may affect the plant behaviour under loads arising from hazards or affects their occurrence frequency at least ~~,~~ periodically~~, and as specified by the regulatory body~~.	I believe that stating that in the case of every plant modification the hazard management should be reviewed and updated makes the recommendation unviable. There are great numbers of minor modifications both in the design and the operating organizations that clearly cannot affect the plants behavior during such events or the occurrence of such events. I also believe that in the best case scenario the hazard management is updated after every major modification so it is designed for the actual state of the plant. The periodical update is only a “plan B” if the continuous update is not achievable which should be reflected in the recommendation. Just as in my previous comments I believe that referring the national regulator’s practice is counterintuitive and unnecessary for this recommendation. The national legal and regulatory framework should be developed in accordance with the IAEA standards, therefore there is no point to refer to them in these standards.	X	7.10.Modifications in the nuclear power plant design and/or operation during its lifetime (with regard to both equipment and organization) should be reflected in hazard management. Hazard management processes and procedures should be reviewed and updated following any plant modification, and periodically.		We do not mention regulator’s activities so this is remeoved. Other parts: these aspects also to be considered in the periodic review aspects of the approach to operational hazards management. Also, this is covered in other paras such as 3.13.

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Russian Federation 16-1	29	7.11.	7.11 **For existing NPPs** if proposed solutions to potential hazard impacts are not implemented, the justification for not implementing the solutions should be reviewed and documented. The technical justification should describe any compensatory features provided to maintain an acceptable level of safety, where applicable.	These provisions are suitable for existing NPPs, but for new NPPs non-implementation of means of protection against hazards means non-compliance with the design during construction of NPP			X	We do not see any reason to restrict the solutions described here even for new plants. As long as it can be explained that they are acceptable from a safety point of view, we consider that these recommendations can be applied to both new and existing plants.
Indonesia 36	29	7.11.	If proposed solutions to potential hazard impacts are not implemented, the justification for not implementing the solutions should be reviewed and documented. The technical justification should describe any compensatory features provided to maintain an acceptable level of safety, where applicable. **The proposed solutions also include the effect on SSCs important to safety during performing the modification of the installation.**	Adding a new sentence. When the modifications are performed, it should be ensured that there is no affecting on equipment qualification and safety classification, including both direct and indirect impacts on nuclear safety and any effects on the integrity or operability of the hazard prevention, protection and mitigation features (both passive and active) as a result of these modifications.	X			
Hungary 15	29	7.7.	Procedures, trainings, drills, and exercises for hazard coping and mitigation strategies and measures should be periodically validated to ensure that they remain consistent with updated design assumptions or design ~~bases~~ basis from safety assessments or safety analysis. Any changes in the procedures or in the use of the procedures should be communicated to all personnel involved and if necessary, reflected in the training programme.	I think this is a typo. Design basis should singular because it refers to a single set of states/conditions that is the basis of the design.			X	"Bases" is correct as in this case since there will be more than one design basis; hence "bases".
Indonesia 34	29	7.7.	Procedures, training~~s~~, drills, and exercises for hazard coping and mitigation strategies and measures should be periodically validated to ensure that they remain consistent with updated design assumptions or design bases from safety assessments or safety analysis. Any changes in the procedures or in the use of the procedures should be communicated to all personnel involved and if necessary, reflected in the training program~~me~~.	Trainings is uncountable noun. Consider to changing noun	X			
Russian Federation 15	29	7.8.	Strategies for coping with hazard impact should be examined and updated if there are any changes to the civil infrastructure around the plant site. Such changes include the contact information of external organizations, changes in regional population sizes and the proximity of these populations to the site, electrical grid interfaces, changes in transportation routes, changes in local industries~~, and hydrological and geological changes.~~	As a rule hydrological and geological changes do not relate to changes in "civil infrastructure" (or more clear examples of such changes shall be provided here in text).	X	7.8.Strategies for coping with hazard impact should be examined and updated if there are any changes to the civil infrastructure around the plant site. Such changes include the contact information of external organizations, changes in regional population sizes and the proximity of these populations to the site, electrical grid interfaces, changes in transportation routes, and changes in local industries.		Agree. Hydrological and geological change aspects are not related to changes to civil infrastructure so this part of sentence will be removed. They are to be considered in the periodic review aspects of the approach to operational hazards management. See para 3.13.
Indonesia 35	29	7.8.	Strategies for coping with hazard impact should be examined and updated~~, if there are any changes to the civil infrastructure around the plant site~~ **if there are any civil infrastructure changes around the plant site**. Such changes include the contact information of external organizations, changes in regional population sizes and the proximity of these populations to the site, electrical grid interfaces, changes in transportation routes, changes in local industries, **changes in land use planning by local government**, and hydrological and geological changes.	Add a suggestion about land use planning by local government.			X	Site characteristics and changes in infastructure are covered in paras 3.13 and 3.15. To avoid duplication para 7.8 won't be modified.
UK 13	29	7.8.	Strategies for coping with hazard impact should be examined and updated if there are any changes to the civil infrastructure around the plant site. Such changes include the contact information of external organizations, changes in regional population sizes and the proximity of these populations to the site, electrical grid interfaces, changes in transportation routes, changes in local industries, and hydrological and geological changes. Propose adding the following: "In addition, the current effects and future predictions of climate change on site safety margins and any civil infrastructure critical to the hazard management strategy should be considered in the context of scientific understanding of climate phenomena, to ensure robustness against extremes of weather. This should be applied in a manner that is proportionate to the risk from natural hazards, site lifecycle and states' own requirements."	Climate change is not mentioned anywhere, but its impact on safety margins for both new and existing installations, given "state of the art" understanding of climate science should be considered. This may be applied in a context appropriate to each state's arrangements	X	7.9 … SSG-18 provides the guidance for the periodical update on climate change information [XX].…		We understand the importance to consider the sicentific context because there are a lot of debate about the climate change. However, with similar reason with UK 12, the "climate change" aspects should be considered in the scope of the periodic review of the approach to operational hazards management. It is also true that climate change considerations must be taken into account in siting and design as well. It is therefore only recommended here that any changes be taken into account in the review, including infrastructure, as described in 3.13. Detailed guidance on climate change is provided in SSG-18, and SSG-18 has been cited in this revision.
Japan 6	29	7.9.	The potential effects from changes in hazards should be identified and updated based on the periodic site hazard reassessment and periodic safety assessment results (as needed). Additional considerations might be needed for multiple units (e.g. extreme wind could cause the loss of off-site power if the switchyard is shared between units or if neighbouring units have changed their operating state affected by different hazards).	Clarify the meaning of phenomena of second if–statement.	X	7.9.The potential effects from changes in hazards should be identified and updated based on the periodic site hazard reassessment and periodic safety assessment results (as needed). The guidance for the periodical update on climate change information is provided in IAEA SSG-18 [XX]. Additional considerations might be needed for multiple units. The change of the anticipated highest speed of extreme wind might cause the evaluation for the potential loss of off-site power of multiple units sharing the switchyard. In this case, it is also necessary to evaluate the operating state of both plants, e.g. one unit is undergoing an outage while the other is in full-power operation.		Example is rewritten with out brackets to it make more readable.
Hungary 17-1	30	8.2.	The hazard management should include specific plant walkdown procedures to be conducted periodically~~, before and~~ after and (if forecasted or its occurrence is otherwise predicted in the near future then) before an event. These walkdowns should ensure that the SSCs needed for prevention, protection and mitigation of events due to hazards and for coping with effects from hazards are in place and maintained operable in a reliable manner. Some examples of walkdowns are the following: – Ensuring that culverts are kept clean immediately before a predicted major external flooding as they can have a significant impact on the ability of the site drainage systems to dewater the site. – Ensuring loose materials (especially heavy objects) are cleared away or tied down as they can create potential airborne missiles if the hazard occurs.	I think that since the walkdowns prior the event are just applicable in specific cases it should come as a recommendation for walkdowns after the event and specified on what the recommendation mean about it as in the proposed text.			X	It is true that the walkdowns prior the event are just applicable in specific cases. Walkdowns before and after have different needs. Before is more or less preventive measures and after is about assessing damage, coping and mitigation of consequence. check, before (preventive) and after (assessing damage, coping / mitigation). However, the need for walkdown should obviously be considered on a hazard by hazard basis, and there is no need in stating them here. (There are many cases where the decision not to do a walk-down is justified.)

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
Hungary 17-2	30	8.2.	– Non-essential flammable materials are removed from the vicinity of activities including ignition sources (flame cutting, welding), fire extinguisher are on site and operable, etc. – I&C equipment is sealed and protected against water and steam jets while activities are done on SSCs containing water in their proximity. Some of these actions are of particular importance when an external hazard (such as extreme winds or flooding) is forecasted or an increased risk from internal hazard is predicted in the near future (or plant modification/maintenance activities that are predicted to pose an increased risk to the facility e.g.: disassembling, cutting, welding, etc. on or close to equipment that contains flammable or high pressure materials, on or close to I&C equipment that are relevant to safety, etc.), but proper housekeeping is required to be in effect at all times even if some actions are particularly important only at times when an external hazard is forecasted or an increased risk of an internal hazard is predicted (Requirement 28 of SSR-2/2 (Rev. 1) [1]). Further examples of actions that need to be taken, and checked during these walkdowns, are given in Appendices I and II.	I think an increased risk of internal hazards can be predicted just and may require walkdowns prior the maintanence/modification activity which should be mentioned here as well. The approach in the case of such increased risks should be the same as in the case of external hazards, namely that before the work can begin on or close to equipment that pose a threat as an internal hazards source on facility a walkdown should check if all the protective measures are in place and operational and the risk is mitigated to an acceptable level. This issue was mentioned several times in the document (e.g. 4.6 and 8.6), however this is the only case where walkdowns prior the activity is named as a preventive measure, which I believe can be important.	X	8.2.Hazard management should include specific plant walkdown procedures to be conducted periodically, before and after an event. The results of these walkdowns should be properly documented. These walkdowns should ensure that the SSCs needed for prevention, protection, and mitigation of events due to hazards and for coping with effects from hazards are in place and maintained operational. Some examples of walkdowns are the following: –Ensuring that non-essential flammable materials are removed from the vicinity of activities including ignition sources (flame cutting, welding); –Ensuring that fire extinguishers are on site and operable; –Ensuring that culverts are kept clear as they can have a significant impact on the ability of the site drainage systems to dewater the site; –Ensuring loose materials (especially heavy objects) are cleared away or tied down as they can create potential airborne missiles if extreme wind occurs.		First bullet will be added. Other two bullets are covered already. For example in appendice I or II.
UK 14	30	8.2.	The hazard management should include specific plant walkdown procedures to be conducted periodically, before and after an event. The results of these walkdowns should be properly documented. These walkdowns should ensure that the SSCs needed for prevention, protection and mitigation of events due to hazards and for coping with effects from hazards are in place and maintained operable in a reliable manner. Some examples of walkdowns are the following: Ensuring that culverts are routinely kept clean, with specific consideration immediately before a predicted major external flooding as they can have a significant impact on the ability of the site drainage systems to dewater the site. Ensuring loose materials (especially heavy objects) are cleared away or tied down as they can create potential airborne missiles if the hazard occurs. Some of these actions are of particular importance when an external hazard (such as extreme winds or flooding) is forecasted, but proper housekeeping is required to be in effect at all times even if some actions are particularly important only at times when an external hazard is forecasted (Requirement 28 of SSR-2/2 (Rev. 1) [1]). Further examples of actions that need to be taken, and checked during these walkdowns, are given in Appendices I and II.	Culverts should be routinely kept clean, not just done immediately before an extreme event.	X	8.2.Hazard management should include specific plant walkdown procedures to be conducted periodically, before and after an event. The results of these walkdowns should be properly documented. These walkdowns should ensure that the SSCs needed for prevention, protection, and mitigation of events due to hazards and for coping with effects from hazards are in place and maintained operational. Some examples of walkdowns are the following: –Ensuring that non-essential flammable materials are removed from the vicinity of activities including ignition sources (flame cutting, welding); –Ensuring that fire extinguishers are on site and operable; –Ensuring that culverts are kept clear as they can have a significant impact on the ability of the site drainage systems to dewater the site; –Ensuring loose materials (especially heavy objects) are cleared away or tied down as they can create potential airborne missiles if extreme wind occurs.		Agree. To be modified "Ensuring that culverts are kept clear as they can have a significant impact on the ability of the site drainage systems to dewater the site."
USA 41	30	8.2.	– Ensuring loose materials (especially heavy objects) are cleared away or tied down as they can create potential airborne missiles if ~~the hazard occurs~~ extreme winds occur.	The hazard here is extreme winds	X	8.2.Hazard management should include specific plant walkdown procedures to be conducted periodically, before and after an event. The results of these walkdowns should be properly documented. These walkdowns should ensure that the SSCs needed for prevention, protection, and mitigation of events due to hazards and for coping with effects from hazards are in place and maintained operational. Some examples of walkdowns are the following: –Ensuring that non-essential flammable materials are removed from the vicinity of activities including ignition sources (flame cutting, welding); –Ensuring that fire extinguishers are on site and operable; –Ensuring that culverts are kept clear as they can have a significant impact on the ability of the site drainage systems to dewater the site; –Ensuring loose materials (especially heavy objects) are cleared away or tied down as they can create potential airborne missiles if extreme wind occurs.		Agree. Sentence is added.
USA 42	30	8.2.	Some of these actions are of particular importance when an external hazard (such as extreme winds or flooding) is forecasted, but proper housekeeping is required to be in effect at all times ~~even if some actions are particularly important only at times when an external~~ hazard ~~is forecasted~~ (Requirement 28 of SSR-2/2 (Rev. 1) [1]).	Remove redundant phrase	X	8.2.Hazard management should include specific plant walkdown procedures to be conducted periodically, before and after an event. The results of these walkdowns should be properly documented. These walkdowns should ensure that the SSCs needed for prevention, protection, and mitigation of events due to hazards and for coping with effects from hazards are in place and maintained operational. Some examples of walkdowns are the following: –Ensuring that non-essential flammable materials are removed from the vicinity of activities including ignition sources (flame cutting, welding); –Ensuring that fire extinguishers are on site and operable; –Ensuring that culverts are kept clear as they can have a significant impact on the ability of the site drainage systems to dewater the site; –Ensuring loose materials (especially heavy objects) are cleared away or tied down as they can create potential airborne missiles if extreme wind occurs.		Agree, redundant phrase is removed.
Russian Federation 17-1	30	8.3.	8.3. Hazard management should identify the measures needed for the management of materials and enhanced housekeeping in accordance with Requirement 28 of SSR-2/2 (Rev. 1) [1].	Requirements 28 SSR-2/2 (Rev. 1) do not provide for the concept of "enhanced" management of materials and housekeeping in case of hazards			X	While it is true that there is no mention of "enhanced" in the SSR, nevertheless, requirement 28 of the SSR is a requirement for all plant conditions and the citation is appropriate. The Safety Guide is a "recommendation", not a "requirement", and we believe that a better response in hazard management (rather than a minimum requirement) would be to consider enhanced controls, depending on the plant condition.
Russian Federation 17-2	30	8.4.	8.4. Control of materials at the various working areas ~~**should be enhanced at times of increased risk, for example if a hazardous event is predicted,**~~ **<u>should envisage measures that must be taken to ensure safety in case of hazardous events (predictable and unpredictable)</u>** …	Requirements 28 SSR-2/2 (Rev. 1) do not provide for the concept of "enhanced" management of materials and housekeeping in case of hazards			X	Same as above

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Russian Federation 17-3	30	8.6.	8.6. Housekeeping should be enhanced at different times throughout the lifetime of the nuclear power plant **according to the results of hazards analysis.** ~~**, including periods of increased risk (e.g. just before returning from an outage or after the implementation of a modification).**~~	Requirements 28 SSR-2/2 (Rev. 1) do not provide for the concept of "enhanced" management of materials and housekeeping in case of hazards			X	Same as above
Germany 17	31	9.1.	INSPECTION, MAINTENANCE, AND TESTING OF HAZARD PREVENTION, PROTECTION AND MITIGATION MEASURES	As listed in 9.2 – bringing in accordance	X			
Germany 18	31	9.1.	In accordance with Requirement 31 in IAEA SSR-2/2 (Rev. 1) [1], the operating organization is required to establish and implement a comprehensive programme to perform maintenance, testing and inspections of hazard prevention, protection and mitigation measures identified in the hazard analysis.	As listed in 9.2 - bringing in accordance	X			
USA 43	31	9.1.	In accordance with Requirement 31 in IAEA SSR-2/2 (Rev. 1) [1], the operating organization is required to establish and implement a comprehensive programme to perform maintenance, testing and inspections of hazard protection and mitigation measures ~~identified in the hazard analysis~~.	Hazard analysis identifies and characterizes the hazards, not the protection or mitigation measures.	X	9.1.In accordance with Requirement 31 in IAEA SSR-2/2 (Rev. 1) [1], the operating organization is required to establish and implement a comprehensive programme to perform maintenance, testing, and inspections of hazard prevention, protection, and mitigation measures. Further recommendations on such programmes are provided in IAEA Safety Standards Series No. NS-G-2.6, Maintenance, Testing, Surveillance and In-Service Inspection in Nuclear Power Plants [13].		Hazard analysis do not provide design solutions (such as protection or mitigation measures), thus this part of sentence is removed.
France 6	31	9.2.	The maintenance of design features for hazard prevention, protection and mitigation should be included in surveillance programmes to ensure permanent protection against and mitigation of internal and external hazards ~~by conservative design~~	The emphasis on conservative design is not specific to maintenance activities.	X	9.2.The maintenance of design features for hazard prevention, protection, and mitigation should be included in surveillance programmes to ensure protection against and mitigation of internal and external hazards. The operating organization should perform regularly scheduled inspections and maintenance activities to preserve the integrity and functional availability of all SSCs important to safety designed to prevent, as applicable, protect against and mitigate hazards.		Agreed with editorial improvement.
France 7	31	9.2.	The operating organization should perform regularly scheduled inspections and maintenance activities to preserve the integrity and functional availability of all engineered structures and barriers designed to prevent, as applicable, protect against and mitigate hazards.	Design features for hazard prevention (mainly internal hazards) should also be included in the scheduled maintenance.	X	9.2.The maintenance of design features for hazard prevention, protection, and mitigation should be included in surveillance programmes to ensure protection against and mitigation of internal and external hazards. The operating organization should perform regularly scheduled inspections and maintenance activities to preserve the integrity and functional availability of all SSCs important to safety designed to prevent, as applicable, protect against and mitigate hazards.		
Indonesia 37	31	9.2.	The maintenance of design features for hazard prevention, protection and mitigation should be included in surveillance programmes **and ageing programme /management** to ensure protection against and mitigation of internal and external hazards by conservative design. The operating organization should perform regularly scheduled inspections and maintenance activities to preserve the integrity and functional availability of all ~~engineered structures and barriers~~ **SSCs important to safety** designed to mitigate hazards.	Ageing management ensures the availability of required safety functions and identifies the lifetime of SSC which in line with surveillance programme Changing '' into 'SSCs important to safety'. In the appendix of the document explains that the fire protection system to mitigate fire hazards. Based on IAEA glossary, system is a set of components, and structures is a passive element. By using 'SSCs important to safety', the meaning of the sentences is more board.	X	9.2.The maintenance of design features for hazard prevention, protection, and mitigation should be included in surveillance programmes to ensure protection against and mitigation of internal and external hazards. The operating organization should perform regularly scheduled inspections and maintenance activities to preserve the integrity and functional availability of all SSCs important to safety designed to prevent, as applicable, protect against and mitigate hazards.		Agree, changed to SSCs important to safety. Surveillance program include ageing management.
USA 44	31	9.2.	The maintenance of design features for hazard prevention, protection and mitigation should be included in surveillance programmes to ensure protection against and mitigation of internal and external hazards ~~by conservative design~~.	Conservative design is not related maintenance	X	9.2.The maintenance of design features for hazard prevention, protection, and mitigation should be included in surveillance programmes to ensure protection against and mitigation of internal and external hazards. The operating organization should perform regularly scheduled inspections and maintenance activities to preserve the integrity and functional availability of all SSCs important to safety designed to prevent, as applicable, protect against and mitigate hazards.		Agree, part of sentence is removed.
Russian Federation 16-2	31	9.3.	9.5 **For existing NPPs** if these operability specifications cannot be met, alternative measures should be specified and implemented to reduce the risk (see para. 9.5), and the time allowed to complete these alternative measures should be indicated.	These provisions are suitable for existing NPPs, but for new NPPs non-implementation of means of protection against hazards means non-compliance with the design during construction of NPP			X	We do not see any reason to restrict the alternative measures described here even for new plants. As long as it can be explained that they are acceptable from a safety point of view, we consider that these recommendations can be applied to both new and existing plants.
Pakistan 1	31	9.3.	The operating organization should develop and maintain a list of hazard protection measures for the site **and plant** and should implement inspection, maintenance and testing activities to ensure their availability.	List of hazard protection measures should also address not only site related hazard but plant also.	X			
Pakistan 2	31	9.4.	The inspection, maintenance and testing for the site **and plant** should include general hazard protection measures and protection measures for specific hazards.	List of hazard protection measures should also address not only site related hazard but plant also	X			
Israel 1-1	31	9.4.	General Remark regarding Manual Fire Fighting Capability: Manual firefighting capability is included in Requirement 22 of SSR-2/2 (Rev.1), as mentioned in paragraph 2.10 of DS503. Considering this requirement and the fact that DS503 is a revision (and very important scope expansion) of NS-G-2.1, we would like to suggest to consider to put more emphasis (and "visibility") in the main text of DS503 to manual firefighting capability. For example, in NS-G-2.1, a separate detailed section (Section 8) was devoted to Manual Fire Fighting Capability and the manual capabilities are specifically addressed in Section 7 there. In DS503, paragraph 4 of Section 9 (inspection, maintenance and testing of hazard protection and mitigation measures), lists seven hazard protection measures that should be inspected, maintained and tested – including examples of on-site mobile equipment and features (like bilge pumps and mobile generators), but manual firefighting capability measures/equipment are not addressed. Such measures are implicitly mentioned in paragraph 9.5 only in the context of on-site additional hazard protection measures during off line states of other "original" protection measures (during inspection, maintenance and testing). Manual firefighting capabilities are mentioned explicitly in DS503 only in the Appendix of the main text (paragraphs 43-49 Appendix I).	Completeness	X	10.7. –Manual firefighting capability and automatic fire extinguishing by different types of fire extinguishing systems and equipment provided, their use, maintenance, inspection and controls;		In this revision, specific provisions relating to internal fire event have basically been moved to the Appendix, and the manual firefighting capability has been left as fully described as in the original NS-G-2.1. In addition, the Appendix is treated the same as the main text (since it is not an Annex) and can contain recommendations, so there is no need to include manual firefighting capability in the main text. (This can be applied to other matters than manual firefighting capacity, e.g. handling of combustible materials.) However, there is no mention of manual firefighting capability in the recommendations for training in Chapter 10. For this reason, it has been decided to add it in 10.7 instead of in chapter 9.

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Indonesia 38	31	9.4.	…. On-site mobile equipment and features for mitigating hazard effects such as emergency vehicles, ~~bilge pump~~ **submerged** pumps, mobile diesel generators; **Emergency procedures**	Changing 'bilge pump' into 'submerged pump'. Commonly, it uses a submerged pump than bilge pump to discharge the water. In line with I.42 of Appendix I, periodic updating of the emergency preparedness programmes includes emergency procedures. The implementation of the updated emergency procedures should be tested by simulation.	X	9.4.The inspection, maintenance, and testing for the site and plant should include general hazard protection measures and protection measures for specific hazards. Hazard protection measures that should be inspected, maintained, and tested include the following: –Hazard detection and alarm systems; –Communication systems for use in the occurrence of a hazard; –Emergency lighting systems; –On-site mobile equipment and features for mitigating hazard effects such as emergency vehicles, submerged pumps, mobile diesel generators; –Engineered structures, fittings and barriers such as fire doors, watertight doors, dampers and penetrations; –Access routes and escape routes for hazard response personnel; –Respirators and protective clothing for radiological applications.		Changing bilge pump to submerged pump is accepted. Testing/simulation of EOPs is general practice and not appropriate in the context of this paragraph.
Israel 1-2	32	9.5.	General Remark regarding Manual Fire Fighting Capability: Manual firefighting capability is included in Requirement 22 of SSR-2/2 (Rev.1), as mentioned in paragraph 2.10 of DS503. Considering this requirement and the fact that DS503 is a revision (and very important scope expansion) of NS-G-2.1, we would like to suggest to consider to put more emphasis (and "visibility") in the main text of DS503 to manual firefighting capability. For example, in NS-G-2.1, a separate detailed section (Section 8) was devoted to Manual Fire Fighting Capability and the manual capabilities are specifically addressed in Section 7 there. In DS503, paragraph 4 of Section 9 (inspection, maintenance and testing of hazard protection and mitigation measures), lists seven hazard protection measures that should be inspected, maintained and tested – including examples of on-site mobile equipment and features (like bilge pumps and mobile generators), but manual firefighting capability measures/equipment are not addressed. Such measures are implicitly mentioned in paragraph 9.5 only in the context of on-site additional hazard protection measures during off line states of other "original" protection measures (during inspection, maintenance and testing). Manual firefighting capabilities are mentioned explicitly in DS503 only in the Appendix of the main text (paragraphs 43-49 Appendix I).	Completeness	X	10.7. –Manual firefighting capability by different types of fire extinguishing systems and equipment provided, their use, maintenance, inspection and controls;		Same as above
Indonesia 39	33	10.3.	10.3. In accordance with Requirement 7 of IAEA SSR-2/2 (Rev. 1) [1], the operating organization ensure that the personnel have adequate **qualification and competence** technical **and certain non-technical** skills commensurate with their roles in hazard management and familiarity with the procedures to be followed.	Non-technical skills are also important, such as attitudes related to human factors	X	10.3.In accordance with Requirement 7 of IAEA SSR-2/2 (Rev. 1) [1], the operating organization ensure that the personnel have adequate skills commensurate with their roles in hazard management and familiarity with the procedures to be followed.		It is not necessary to discuss skills as technical or non-technical in this guide.
Indonesia 40	33	10.5.	The training of all personnel on hazard management should include the following topics: – Hazard safety principles at the plant; – General awareness of specific hazards (see para. 10.7); – Roles and responsibilities of the personnel for hazard management before, during and after hazard events; – Recognition of audible and visual alarm signals including fire alarms, tsunami warnings, and other alarms as applicable to the site; – Exits and emergency evacuation routes in the event of an internal or external hazard; – The need to delay or discontinue certain plant activities in case specific external hazards are predicted such as extreme ambient temperatures, flooding, or extreme wind; including the means of reporting hazards and actions to be taken to make work safe; **- Effective communication to the media, public and local government with related to hazard and its implication** **Crisis communication to the news media, public authorities, and local residents during an emergency includes field monitoring, transportation and traffic control, public communication and information, and community members' assistance, including medical care and property protection.**	It is recommended to make materials about communication from the person in charge in emergency preparedness appointed to speak to the media, the public, and the government to convey the latest conditions about the accident or emergency that is happening at the right time.			X	We agree that wide range aspects of communication in emergencies are important, but not appropriate to discribe in this paragraph. This paragraph 10.5 addresses training for all personnel, including guests, vendors and contractors visiting the power plant, and should not include proposed sentences for communications to the media or the public. On the other hand, the para 10.6 is for the trainings for personnel responsible to hazard management, but paragraph 10.6 is focused on common trainings for plant protection against hazards and apropriate external communication in emergencies in general is beyond the scope of this guide. Communication between different organizations which are involved in hazard management are covered in different parts of this safety guide. Overall communication of NPP in case of emergency do not belong to the scope of this safety guide. Appropriate communication and notification to co-operate with external organizations (to protect the plant), is described in 10.7 as a training matter and some additions have been made.

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Indonesia 41	34	10.6.	The training of all personnel on hazard management should include the following topics: – Hazard safety principles at the plant; – General awareness of specific hazards (see para. 10.7); – Roles and responsibilities of the personnel for hazard management before, during and after hazard events; – Recognition of audible and visual alarm signals including fire alarms, tsunami warnings, and other alarms as applicable to the site; – Exits and emergency evacuation routes in the event of an internal or external hazard; – The need to delay or discontinue certain plant activities in case specific external hazards are predicted such as extreme ambient temperatures, flooding, or extreme wind; including the means of reporting hazards and actions to be taken to make work safe; **- Effective communication to the media, public and local government with related to hazard and its implication** **Crisis communication to the news media, public authorities, and local residents during an emergency includes field monitoring, transportation and traffic control, public communication and information, and community members' assistance, including medical care and property protection.**				X	See Indonesia 40.
Germany 19	34	10.6.	… – Familiarization with the physical location of SSCs contributing to protection and safety, preferably through a plant walkdown;	This item seems to be too generic as it could be interpreted that the physical location of everything on plant site should be known. Therefore it is proposed to limit the scope by the added text (which is given in the IAEA glossary in the definition of SSCs).	X	–Familiarization with the physical location of SSCs contributing to protection and safety, preferably through a plant walkdown;		Agree, it is align with IAEA Glossary
Russian Federation 18	35	10.7.	The training for personnel … should cover specific topics, as follows: For fire hazards: … - Preventing adverse effects from consequential flooding **caused by the operation of water fire extinguishing systems**; …	The reason for flooding in the event of a fire must be explained.	X	For fire hazards: –How to control combustibles and to ensure that area limitations on fire loadings are met; –Awareness of potential ignition sources, and their limitation and control - e.g. by using hot work procedures; –Maintenance, inspection, and controls of passive fire protection means including of fire barriers with their active elements such as doors, dampers, and other penetrations, as well as consideration of the corresponding relevant working practices; –Maintenance, inspection, and controls of fire detection, alarm, and reporting means including actions to be taken; –Recognition of audible and visual fire alarm signals; –Maintenance and controls of means for access and escape as well as emergency evacuation routes in the event of fire; –The designated assembly point for evacuation; –Preventing adverse effects from flooding caused by fire extinguishing media; –Manual firefighting capability and automatic fire extinguishing by different types of fire extinguishing systems and equipment provided, their use, maintenance, inspection, and controls; –Fire safety policy at the plant; –Awareness of specific fire hazards (including combined hazards), including limitations on area fire loading and, where necessary, associated radiological concerns; –Significance of the control of combustible materials and ignition sources and its potential impact on the permissible fire loading in an area; –The hazards associated with activities such as cutting and welding that could produce a potential ignition source; –The stipulations of the work permit system, specific situations in which a fire watch is necessary, and the risk of introducing potential ignition sources into fire areas containing components identified as important to safety; –Instructions on work implementation and general fire safety training so that the personnel can readily recognize various fire hazards in the plant and can understand the implications of introducing combustible materials or ignition sources into safety related areas; –Hot work controls and their significance for fire safety as well as instructions and procedures for taking appropriate additional or alternative fire prevention, protection, and mitigation measures to sustain		Reflected with other MS comments.
Hungary 2	35	10.7.	For internal floodings: – The role of water barriers, drainage systems, the significance of the floor area control against temporary storage, and the result and the assumption of the flooding analysis; – The ability to respond (detect and isolate) to leaks in diverse locations within evaluated time. - The role of the leak before break concept to avoid a large steam flooding	Internal flooding can happen by water or steam as well. The steam flooding is more dangerous.			X	There is no need to clarify type of leak here. These are only examples and more information is provided in appendices I and II. Please see Hugary 3 about the consideration for the steam flooding.
France 8	35	10.7.	Additional recommendations For explosion hazards: - Active and passive protection systems (such as gas detectors, blast doors, blowout panels, room and area ventilation systems) - Explosion detection, alarm and reporting means and actions to be taken; - Recognition of audible and visual explosion alarm signals; - Significance of the control of flammable gas pipes - The hazards associated with activities using flammable, compressed gas or batteries charging - Warning signs should be placed at the entrances to areas, and on equipment, containing explosive materials to warn personnel of restrictions or access control measures and of the necessity to permanently control ignition sources.	Additional recommendations on explosion hazards	X	For explosion hazards: –Active and passive protection systems (such as gas detectors, blast doors, blowout panels, room and area ventilation systems); –Explosion detection, alarm and reporting means and actions to be taken; –Recognition of audible and visual explosion alarm signals; –Significance of the control of flammable gas pipes; –The hazards associated with activities using flammable, compressed gas, or batteries charging.		Few exposion hasard examples are added.
UK 16	35	10.7.	10.7. The training for personnel who initiate or authorize relevant work activities and for personnel who may be assigned the duties for prevention, protection or mitigation on different hazards should cover relevant specific topics which may include, but are not necessarily limited to, the following :	This shouldn't be prescriptive and considered comprehensive. It needs to be hazards/ operation/ site specific and the list provided are examples. (For example doors on their own can be complemented by a raised footprint so flood water could never reach the door threshold and focus is therefore on not changing that flow of water on the site).	X	10.7.Familiarization with and training for personnel responsible for initiation or authorization of relevant work activities should cover specific topics regarding prevention, protection or mitigation on hazards which might include, but are not necessarily limited to, the following:		Agree. These are only examples for plant operators to be used when they implement their own plant specific procedures. Text is modified to clarify that these are examples.

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Canada 20	35	10.7.	The following statement is proposed to be added to the list: Significance of adherence to safety measures and procedures while performing hot work in confined spaces.	The potential for elevated risk associated with hot work in confined spaces warrants the inclusion of this statement. In addition, considering the comprehensive list in this paragraph, the proposed statement would ensure completeness of the list.	X	For fire hazards: –How to control combustibles and to ensure that area limitations on fire loadings are met; –Awareness of potential ignition sources, and their limitation and control - e.g. by using hot work procedures; –Maintenance, inspection, and controls of passive fire protection means including of fire barriers with their active elements such as doors, dampers, and other penetrations, as well as consideration of the corresponding relevant working practices; –Maintenance, inspection, and controls of fire detection, alarm, and reporting means including actions to be taken; –Recognition of audible and visual fire alarm signals; –Maintenance and controls of means for access and escape as well as emergency evacuation routes in the event of fire; –The designated assembly point for evacuation; –Preventing adverse effects from flooding caused by fire extinguishing media; –Manual firefighting capability and automatic fire extinguishing by different types of fire extinguishing systems and equipment provided, their use, maintenance, inspection, and controls; –Fire safety policy at the plant; –Awareness of specific fire hazards (including combined hazards), including limitations on area fire loading and, where necessary, associated radiological concerns; –Significance of the control of combustible materials and ignition sources and its potential impact on the permissible fire loading in an area; –The hazards associated with activities such as cutting and welding that could produce a potential ignition source; –The stipulations of the work permit system, specific situations in which a fire watch is necessary, and the risk of introducing potential ignition sources into fire areas containing components identified as important to safety; –Instructions on work implementation and general fire safety training so that the personnel can readily recognize various fire hazards in the plant and can understand the implications of introducing combustible materials or ignition sources into safety related areas; –Hot work controls and their significance for fire safety as well as instructions and procedures for taking appropriate additional or alternative fire prevention, protection, and mitigation measures to sustain		Agree; see re-written text.
Turkey 5	35	10.7.	The following sentence “Notification and communication with external organizations” should be inserted as an additional example under the topic, namely “For extreme wind and other meteorological hazards:”	Within the scope of paragraph 10.7, notification and communication with external organizations are considered as training topics for the personnel who may be assigned the duties for prevention, protection or mitigation on different hazard such as seismic events. Similarly, within IAEA approach, extreme wind and other meteorological hazards are also considered as external hazards. Therefore, notification and communication with external organizations should be added as a training topic for extreme wind and other meteorological hazards.	X	For extreme wind and other meteorological hazards: –Awareness of extreme precipitation, storm, and other meteorological warnings and the approach for taking these into account in protection against extreme wind and other meteorological hazards; –Awareness of the hazards associated with items not adequately fixed for extreme winds, heavy machinery that might be in danger of collapsing and the potential that they might become wind-borne missiles, as well as the need of restriction for vehicle parking and equipment storage; –The work control and evacuation scheme according to the meteorological alert level; –Awareness of the potential collapse of temporary platforms and scaffolds and the need to adequately secure them; –Notification and communication with external organizations.		
Germany 20	35	10.7.	Familiarization with and ~~the~~ training for personnel ~~who initiate or authorize relevant work activities and for personnel who may be assigned the duties for~~ responsible for initiation or authorization of relevant work activities should cover specific topics regarding prevention, protection or mitigation on different hazards ~~should cover specific topics, as follows~~ e.g. the following:	This paragraph including the whole bullet list needs to be improved to provide precise statements on the operational aspects of the personnel (first examples for improvements of different bullets are given below). In addition, the list of hazards needs to be re-sorted by internal hazards first, then external natural and human induced, and then completed.	X	10.7.Familiarization with and training for personnel responsible for initiation or authorization of relevant work activities should cover specific topics regarding prevention, protection or mitigation on hazards which might include, but are not necessarily limited to, the following:		
Germany 21	35	10.7.	- Awareness of potential ignition sources, and ~~controls over them~~ their limitation and control~~– forExample~~, e.g. by using hot work procedures;	Awareness and control is not enough, limitation of ignition sources to keep them as low as reasonably practical is not only a design requirement but also needed during plant operation.	X	For fire hazards: –How to control combustibles and to ensure that area limitations on fire loadings are met; –Awareness of potential ignition sources, and their limitation and control - e.g. by using hot work procedures; –Maintenance, inspection, and controls of passive fire protection means including of fire barriers with their active elements such as doors, dampers, and other penetrations, as well as consideration of the corresponding relevant working practices; –Maintenance, inspection, and controls of fire detection, alarm, and reporting means including actions to be taken; –Recognition of audible and visual fire alarm signals; –Maintenance and controls of means for access and escape as well as emergency evacuation routes in the event of fire; –The designated assembly point for evacuation; –Preventing adverse effects from flooding caused by fire extinguishing media; –Manual firefighting capability and automatic fire extinguishing by different types of fire extinguishing systems and equipment provided, their use, maintenance, inspection, and controls; –Fire safety policy at the plant; –Awareness of specific fire hazards (including combined hazards), including limitations on area fire loading and, where necessary, associated radiological concerns; –Significance of the control of combustible materials and ignition sources and its potential impact on the permissible fire loading in an area; –The hazards associated with activities such as cutting and welding that could produce a potential ignition source; –The stipulations of the work permit system, specific situations in which a fire watch is necessary, and the risk of introducing potential ignition sources into fire areas containing components identified as important to safety;		

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Germany 22	35	10.7.	- Maintenance, inspection and controls of ~~P~~passive fire protection means including ~~the importance of~~ fire barriers with their active elements such as doors, dampers, ~~barriers~~ and other penetrations, as well as consideration of the corresponding relevant working practices;	Precision in accordance with fire related Safety Guides on passive fire protection means, in particular fire barriers and fire barrier elements with active functions, for which maintenance and inspections is needed	X	For fire hazards: –How to control combustibles and to ensure that area limitations on fire loadings are met; –Awareness of potential ignition sources, and their limitation and control - e.g. by using hot work procedures; –Maintenance, inspection, and controls of passive fire protection means including of fire barriers with their active elements such as doors, dampers, and other penetrations, as well as consideration of the corresponding relevant working practices; –Maintenance, inspection, and controls of fire detection, alarm, and reporting means including actions to be taken; –Recognition of audible and visual fire alarm signals; –Maintenance and controls of means for access and escape as well as emergency evacuation routes in the event of fire; –The designated assembly point for evacuation; –Preventing adverse effects from flooding caused by fire extinguishing media; –Manual firefighting capability and automatic fire extinguishing by different types of fire extinguishing systems and equipment provided, their use, maintenance, inspection, and controls; –Fire safety policy at the plant; –Awareness of specific fire hazards (including combined hazards), including limitations on area fire loading and, where necessary, associated radiological concerns; –Significance of the control of combustible materials and ignition sources and its potential impact on the permissible fire loading in an area; –The hazards associated with activities such as cutting and welding that could produce a potential ignition source; –The stipulations of the work permit system, specific situations in which a fire watch is necessary, and the risk of introducing potential ignition sources into fire areas containing components identified as important to safety; –Instructions on work implementation and general fire safety training so that the personnel can readily recognize various fire hazards in the plant and can understand the implications of introducing combustible materials or ignition sources into safety related areas; –Hot work controls and their significance for fire safety as well as instructions and procedures for taking appropriate additional or alternative fire prevention, protection, and mitigation measures to sustain		
Germany 23	35	10.7.	- Maintenance, inspection and controls of ~~F~~fire detection, alarm and reporting means ~~and~~ including actions to be taken;	Precision on the operational aspects of fire detection and alarm features	X	For fire hazards: –How to control combustibles and to ensure that area limitations on fire loadings are met; –Awareness of potential ignition sources, and their limitation and control - e.g. by using hot work procedures; –Maintenance, inspection, and controls of passive fire protection means including of fire barriers with their active elements such as doors, dampers, and other penetrations, as well as consideration of the corresponding relevant working practices; –Maintenance, inspection, and controls of fire detection, alarm, and reporting means including actions to be taken; –Recognition of audible and visual fire alarm signals; –Maintenance and controls of means for access and escape as well as emergency evacuation routes in the event of fire; –The designated assembly point for evacuation; –Preventing adverse effects from flooding caused by fire extinguishing media; –Manual firefighting capability and automatic fire extinguishing by different types of fire extinguishing systems and equipment provided, their use, maintenance, inspection, and controls; –Fire safety policy at the plant; –Awareness of specific fire hazards (including combined hazards), including limitations on area fire loading and, where necessary, associated radiological concerns; –Significance of the control of combustible materials and ignition sources and its potential impact on the permissible fire loading in an area; –The hazards associated with activities such as cutting and welding that could produce a potential ignition source; –The stipulations of the work permit system, specific situations in which a fire watch is necessary, and the risk of introducing potential ignition sources into fire areas containing components identified as important to safety; –Instructions on work implementation and general fire safety training so that the personnel can readily recognize various fire hazards in the plant and can understand the implications of introducing combustible materials or ignition sources into safety related areas; –Hot work controls and their significance for fire safety as well as instructions and procedures for taking appropriate additional or alternative fire prevention, protection, and mitigation measures to sustain		
Germany 24	35	10.7.	- Maintenance and controls of ~~M~~means for access and escape as well as emergency evacuation routes in the event of fire;	Precision on the operational aspect	X	For fire hazards: –How to control combustibles and to ensure that area limitations on fire loadings are met; –Awareness of potential ignition sources, and their limitation and control - e.g. by using hot work procedures; –Maintenance, inspection, and controls of passive fire protection means including of fire barriers with their active elements such as doors, dampers, and other penetrations, as well as consideration of the corresponding relevant working practices; –Maintenance, inspection, and controls of fire detection, alarm, and reporting means including actions to be taken; –Recognition of audible and visual fire alarm signals; –Maintenance and controls of means for access and escape as well as emergency evacuation routes in the event of fire; –The designated assembly point for evacuation; –Preventing adverse effects from flooding caused by fire extinguishing media; –Manual firefighting capability and automatic fire extinguishing by different types of fire extinguishing systems and equipment provided, their use, maintenance, inspection, and controls; –Fire safety policy at the plant; –Awareness of specific fire hazards (including combined hazards), including limitations on area fire loading and, where necessary, associated radiological concerns; –Significance of the control of combustible materials and ignition sources and its potential impact on the permissible fire loading in an area; –The hazards associated with activities such as cutting and welding that could produce a potential ignition source; –The stipulations of the work permit system, specific situations in which a fire watch is necessary, and the risk of introducing potential ignition sources into fire areas containing components identified as important to safety; –Instructions on work implementation and general fire safety training so that the personnel can readily recognize various fire hazards in the plant and can understand the implications of introducing combustible materials or ignition sources into safety related areas; –Hot work controls and their significance for fire safety as well as instructions and procedures for taking appropriate additional or alternative fire prevention, protection, and mitigation measures to sustain		

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Germany 25	35	10.7.	- Preventing adverse effects from flooding caused by ~~consequential~~ fire extinguishing media ~~flooding~~;	More comprehensive text in order to take into account that adverse effects do not only have to be prevented as a secondary effect from fire extinguishing but also in case of spurious actuation of fire extinguishing. It is not indicated where the consequential flooding comes from. Furthermore, it is recommended to exchange the arrangement of the two bullets (bullet 8 and bullet 9) for more logical order, as first is the fire extinguishing and then the flooding.	X	For fire hazards: –How to control combustibles and to ensure that area limitations on fire loadings are met; –Awareness of potential ignition sources, and their limitation and control - e.g. by using hot work procedures; –Maintenance, inspection, and controls of passive fire protection means including of fire barriers with their active elements such as doors, dampers, and other penetrations, as well as consideration of the corresponding relevant working practices; –Maintenance, inspection, and controls of fire detection, alarm, and reporting means including actions to be taken; –Recognition of audible and visual fire alarm signals; –Maintenance and controls of means for access and escape as well as emergency evacuation routes in the event of fire; –The designated assembly point for evacuation; –Preventing adverse effects from flooding caused by fire extinguishing media; –Manual firefighting capability and automatic fire extinguishing by different types of fire extinguishing systems and equipment provided, their use, maintenance, inspection, and controls; –Fire safety policy at the plant; –Awareness of specific fire hazards (including combined hazards), including limitations on area fire loading and, where necessary, associated radiological concerns; –Significance of the control of combustible materials and ignition sources and its potential impact on the permissible fire loading in an area; –The hazards associated with activities such as cutting and welding that could produce a potential ignition source; –The stipulations of the work permit system, specific situations in which a fire watch is necessary, and the risk of introducing potential ignition sources into fire areas containing components identified as important to safety; –Instructions on work implementation and general fire safety training so that the personnel can readily recognize various fire hazards in the plant and can understand the implications of introducing combustible materials or ignition sources into safety related areas; –Hot work controls and their significance for fire safety as well as instructions and procedures for taking appropriate additional or alternative fire prevention, protection, and mitigation measures to sustain		
Germany 26	35	10.7.	- Different types of fire extinguishing systems and equipment provided, ~~and~~ their use, maintenance, inspection and controls ~~in extinguishing fires in the initial (incipient) stage~~;	Precision on the different operational aspects of fire extinguishing features (fixed systems, fixed and mobile equipment) not limiting these to the incipient fire but to all stages of fire development, which need to be covered	X	For fire hazards: –How to control combustibles and to ensure that area limitations on fire loadings are met; –Awareness of potential ignition sources, and their limitation and control - e.g. by using hot work procedures; –Maintenance, inspection, and controls of passive fire protection means including of fire barriers with their active elements such as doors, dampers, and other penetrations, as well as consideration of the corresponding relevant working practices; –Maintenance, inspection, and controls of fire detection, alarm, and reporting means including actions to be taken; –Recognition of audible and visual fire alarm signals; –Maintenance and controls of means for access and escape as well as emergency evacuation routes in the event of fire; –The designated assembly point for evacuation; –Preventing adverse effects from flooding caused by fire extinguishing media; –Manual firefighting capability and automatic fire extinguishing by different types of fire extinguishing systems and equipment provided, their use, maintenance, inspection, and controls; –Fire safety policy at the plant; –Awareness of specific fire hazards (including combined hazards), including limitations on area fire loading and, where necessary, associated radiological concerns; –Significance of the control of combustible materials and ignition sources and its potential impact on the permissible fire loading in an area; –The hazards associated with activities such as cutting and welding that could produce a potential ignition source; –The stipulations of the work permit system, specific situations in which a fire watch is necessary, and the risk of introducing potential ignition sources into fire areas containing components identified as important to safety; –Instructions on work implementation and general fire safety training so that the personnel can readily recognize various fire hazards in the plant and can understand the implications of introducing combustible materials or ignition sources into safety related areas; –Hot work controls and their significance for fire safety as well as instructions and procedures for taking appropriate additional or alternative fire prevention, protection, and mitigation measures to sustain		
Germany 27	35	10.7.	- Hot work controls and their ~~The~~ significance for fire safety ~~of controlling risk during the hot work and the~~ as well as instructions and procedures for taking appropriate additional and/or ~~the preferable~~ alternative/compensatory fire prevention, protection and mitigation ~~features~~ measures to sustain protective barriers (e.g. ~~watchmen~~ fire watches during ~~fire sensor repairs~~; fire detection and extinsguishing features inspection, maintenance and repair ~~securing water lines or fire extinguishers while fire water systems are partially isolated.~~	More comprehensive and precise texts, corrections in terminology	X	For fire hazards: –How to control combustibles and to ensure that area limitations on fire loadings are met; –Awareness of potential ignition sources, and their limitation and control - e.g. by using hot work procedures; –Maintenance, inspection, and controls of passive fire protection means including of fire barriers with their active elements such as doors, dampers, and other penetrations, as well as consideration of the corresponding relevant working practices; –Maintenance, inspection, and controls of fire detection, alarm, and reporting means including actions to be taken; –Recognition of audible and visual fire alarm signals; –Maintenance and controls of means for access and escape as well as emergency evacuation routes in the event of fire; –The designated assembly point for evacuation; –Preventing adverse effects from flooding caused by fire extinguishing media; –Manual firefighting capability and automatic fire extinguishing by different types of fire extinguishing systems and equipment provided, their use, maintenance, inspection, and controls; –Fire safety policy at the plant; –Awareness of specific fire hazards (including combined hazards), including limitations on area fire loading and, where necessary, associated radiological concerns; –Significance of the control of combustible materials and ignition sources and its potential impact on the permissible fire loading in an area; –The hazards associated with activities such as cutting and welding that could produce a potential ignition source; –The stipulations of the work permit system, specific situations in which a fire watch is necessary, and the risk of introducing potential ignition sources into fire areas containing components identified as important to safety; –Instructions on work implementation and general fire safety training so that the personnel can readily recognize various fire hazards in the plant and can understand the implications of introducing combustible materials or ignition sources into safety related areas; –Hot work controls and their significance for fire safety as well as instructions and procedures for taking appropriate additional or alternative fire prevention, protection, and mitigation measures to sustain		
USA 45	35	10.7.	For floods external to the buildings: – The role of watertight doors and hatches and the need for them to be kept closed by default to protect against external flooding;	More than doors	X	For flooding external to the buildings: –Controls as well as inspections and maintenance of doors, gates, and penetration seals of buildings which need to remain watertight to withstand external flooding; –Awareness of extreme precipitation and flood warnings and the approach for taking these into account in protection against external flooding;		Agree. Word hatches is added.

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Russian Federation 19	36	10.7.	For floods external to the buildings: … **- in case watertight isn't successfully provided - pumping water from flooded premises (compartments), operation (control) of equipment in flood conditions …** For internal floodings: … **- pumping water from flooded premises (compartments), operation (control) of equipment in flood conditions** …	One of the important activity for personnel training in case of flood.	X	For flooding external to the buildings: –Controls as well as inspections and maintenance of doors, gates, and penetration seals of buildings which need to remain watertight to withstand external flooding; –Awareness of extreme precipitation and flood warnings and the approach for taking these into account in protection against external flooding;		Agree, however less specific sentence is added- pumping water for external floods are not applicable for some kind of flooding phenomena
UK 15	36	10.7.	For floods external to the buildings: The role of watertight doors and the need for them to be kept closed by default to protect against external flooding; The role of water barriers, drainage systems and the results of and assumptions in the flooding analysis	Is there a need to consider remediation of the water and the length of time to recover the leaked fluid? Should management of post hazard environment and reinstatement of plant be a consideration.	X	For internal flooding: –Reliable function of barrier elements (e.g. doors, and other penetrations) in walls, floors, and ceilings and drainage systems for protection against adverse effects from spreading of flooding media in the event of internal flooding, including their control, inspection, and maintenance, as well as floor area control with respect to temporary storage, and the result and assumptions based on the internal flooding hazard analysis; –The ability to respond (detect and isolate) to leaks in diverse locations within evaluated time. –Pumping water from flooded areas or compartments; –Operation of equipment in flood conditions.		Agreed with editorial improvement
Germany 28	36	10.7.	- ~~The role of watertight doors~~ Controls as well as inspections and maintenance of doors, gates, and penetration seals of buildings, etc. which need to remain watertight to withstand external flooding ~~and the need for them to be kept closed by default to protect against external flooding~~; - Installation, controls as well as inspections and maintenance temporary flood protection measures to be additionally taken against external flooding including the corresponding procedures; - Awareness of external precipitation and flood warnings and the operators approach for taking these into account in protection against external flooding;	The original text is too limited and needs to be completed including further aspects	X	For flooding external to the buildings: –Controls as well as inspections and maintenance of doors, gates, and penetration seals of buildings which need to remain watertight to withstand external flooding; –Awareness of extreme precipitation and flood warnings and the approach for taking these into account in protection against external flooding;		Temporary flood protection measures for external flooding (sandbags and removable dams, etc) are not commonly applicable as operational guidance for external events.
Germany 29	36	10.7.	– The significance of field housekeeping to avoid extraneous debris or loose items; – Awareness of the potential collapse of temporary platforms and scaffolds (in particular inside buildings and close to SSCs important to safety) and the need to adequately secure them; – Information on drills and exercises including prompt decision making, notification, communication with external organization, shutdown, work control, evacuation, and other mitigating actions in line with the on-site emergency plan (see paras 3.11. and 10.10);	Please add a new bullet, as temporary platforms and scaffolds that are not sufficiently secured w.r.t. seismic loads, might collapse in case of an earthquake and damage SSC important to safety. The situation is similar to wind loads with the difference that in case of earthquakes (also) temporary structures inside buildings should be taken into account.	X	For seismic events: –The significance of field housekeeping to avoid extraneous debris or loose items; –Awareness of the potential collapse of temporary platforms and scaffolds (in particular inside buildings and close to SSCs important to safety) and the need to adequately secure them; –Information on drills and exercises including prompt decision-making, notification, communication with external organization, shutdown, work control, evacuation, and other mitigating actions in line with the on-site emergency plan (see paras 3.11. and 10.10);		Agreed with modification
Germany 30	36	10.7.	- ~~The~~ ~~role of water barriers~~ ~~suitable~~ Reliable function of barrier elements (e.g. doors, and other penetrations) in walls, floors and ceilings and drainage systems for protection against adverse effects from spreading of flooding media in the event of internal flooding, including their control, inspection and maintenance, ~~the significance of the~~ as well as floor area control with respect to ~~against~~ temporary storage~~, and the result and the assumption of~~ based on the internal flooding hazard analysis;	Providing more precision and completion	X	For internal flooding: –Reliable function of barrier elements (e.g. doors, and other penetrations) in walls, floors, and ceilings and drainage systems for protection against adverse effects from spreading of flooding media in the event of internal flooding, including their control, inspection, and maintenance, as well as floor area control with respect to temporary storage, and the result and assumptions based on the internal flooding hazard analysis; –The ability to respond (detect and isolate) to leaks in diverse locations within evaluated time. –Pumping water from flooded areas or compartments; –Operation of equipment in flood conditions.		Agreed with modification
Germany 31	36	10.7.	– Awareness of the hazards associated with loose items or items not adequately fixed for extreme winds and the potential that they might become wind-borne missiles, as well as the need of restriction for vehicle parking and equipment storage;	Not only loose items are relevant but also items which might get loose (like facade elements of not safety relevant buildings).	X	For extreme wind and other meteorological hazards: –Awareness of extreme precipitation, storm, and other meteorological warnings and the approach for taking these into account in protection against extreme wind and other meteorological hazards; –Awareness of the hazards associated with items not adequately fixed for extreme winds, heavy machinery that might be in danger of collapsing and the potential that they might become wind-borne missiles, as well as the need of restriction for vehicle parking and equipment storage; –The work control and evacuation scheme according to the meteorological alert level; –Awareness of the potential collapse of temporary platforms and scaffolds and the need to adequately secure them; –Notification and communication with external organizations.		Agreed with other items to be considered
Germany 32	36	10.7.	- … - Awareness of external precipitation, storm and other meteorological warnings and the operators approach for taking these into account in protection against extreme wind and other meteorological hazards; …	The list is incomplete, a first addition needed for completion has been provided, but there are other aspects to be addressed for meteorological hazards, which need to be prepared and discussed by the consultants.	X	For extreme wind and other meteorological hazards: –Awareness of extreme precipitation, storm, and other meteorological warnings and the approach for taking these into account in protection against extreme wind and other meteorological hazards; –Awareness of the hazards associated with items not adequately fixed for extreme winds, heavy machinery that might be in danger of collapsing and the potential that they might become wind-borne missiles, as well as the need of restriction for vehicle parking and equipment storage; –The work control and evacuation scheme according to the meteorological alert level; –Awareness of the potential collapse of temporary platforms and scaffolds and the need to adequately secure them; –Notification and communication with external organizations.		Agreed with modification
Germany 33	36	10.8.	~~Because c~~Certain activities might lead to additional risks involving internal or external hazards; therefore familiarization and training for personnel ~~who initiate or authorize~~ in charge of authorizing or performing such ~~these~~ activities should be provided.	Editorial precision and addition of familiarization aspect	X			

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France 9	36	10.9.	The general awareness/familiarization training shall include a description of the categories of radioactive material; labelling, marking, placarding and packaging and segregation requirements; the purpose and content of the radioactive material transport document; and the available emergency response documents	To be in conformity with SSR6	X	10.9.Personnel in charge of authorizing who initiates or authorizes work activities involving handling or management of radioactive material should be trained to ensure they are aware of relevant items which might include, but are not necessarily limited to, the following: –Description of the categories of radioactive material; labelling, marking, placarding, and packaging and segregation requirements; the purpose and content of the radioactive material transport document; and the available emergency response documents; –The ambient conditions that form part of the safe operating envelope for individual fuel or waste packages and the requirement to ensure that these conditions are not exceeded during movement operations; –The means by which the site receives and communicates warnings or information on forecasts for predictable external hazards as (e.g. external flooding, meteorological, and other natural hazards) that could affect the ability of the operating personnel to perform the fuel or waste handling safely; –Actions to take after the occurrence of a seismic hazard during fuel or waste handling to verify that (1) the integrity of the transport package has not been compromised, (2) the receiving facility and SSCs have not been inadmissibly affected and (3) the handling process can be successfully completed.		The comment are reflected in the first bullet.
Germany 34	36	10.9.	Personnel in charge of authorizing or performing who initiate or authorize work activities involving ~~the movement or transport~~ handling or management of radioactive material should be trained to ensure they are aware of e.g. the following: …	Editorial precision and addition of familiarization aspect. The given list is by far not exhaustive and should therefore indicated as examples.	X	10.9.Personnel in charge of authorizing who initiates or authorizes work activities involving handling or management of radioactive material should be trained to ensure they are aware of relevant items which might include, but are not necessarily limited to, the following:		Agreed with editorial improvement
Russian Federation 20	37	10.11.	Training should address the implementation of response actions under unfavourable environmental conditions and, if necessary, under the influence of stress on the anticipated behavior of the personnel.	Please clarify how to implement this requirement. Do methods currently exist to create conditions close to the conditions that arise, for example, during a strong earthquake or other impacts (hazards)? Please provide references or additional explanations here			X	Recommendation for trainings on a mock-up that can reproduce complex situations or consideration for psychological features are provided in NS-G-2.8. The degree of reality varies, but simulated training under unfavourable conditions is a common practice, not only in the nuclear industry, but also in fire drills in general industry. Please check chapter 4. Training is needed to ensure that procedures, systems etc are familiar. This basic routine helps personnel to perform in real situation. It may not be necessary to explain this, but if it is necessary to anticipate an earthquake, some MSs impose restrictions on evacuation routes, or bring a mobile shaking tables into the plant so that participants can experience severe shaking. We do not consider it necessary to describe these matters here.
Germany 37	37	10.12.	The exercises and drills including their evaluation should be documented.	Without documentation learning from the experience is difficult.	X	10.12. Results from exercises and drills should be systematically evaluated and documented, to provide feedback for the improvement of the training programme and, if applicable, the procedures and instructions (see par. 7.7.).		Agree. Incorporated in 10.12
Germany 35	37	10.9.	The method means by which The site receives and communicates warnings or information on forecasts for predictable external hazards events such as (e.g. external flooding, meteorological, extreme wind, flooding and other natural hazards) that could affect The ability of The operating personnel to perform The fuel or waste movement handling safely.	Providing precision and completion	X	–The means by which the site receives and communicates warnings or information on forecasts for predictable external hazards as (e.g. external flooding, meteorological, and other natural hazards) that could affect the ability of the operating personnel to perform the fuel or waste handling safely.		Agreed with editorial improvement
Germany 36	37	10.9.	- Actions to take ~~if a~~ after the occurrence of a seismic ~~event occurs~~ hazard during ~~movement or transport of a~~ fuel or waste handling to verify that the integrity of the transport package has not been compromised and that the receiving facility and the SSCs needed for the handling process have ~~has~~ not been inadmissibly affected and the handling process can be successfully completed ~~damaged and is still able to accept the fuel or waste~~.	Clarification	X	–Actions to take after the occurrence of a seismic hazard during fuel or waste handling to verify that (1) the integrity of the transport package has not been compromised, (2) the receiving facility and SSCs have not been inadmissibly affected and (3) the handling process can be successfully completed.		Agreed with editorial improvement
Russian Federation 6-3	38	I.1.	2.22. In accordance with the objectives of defence in depth, the operating organization should establish procedures to operate the features for prevention, protection and mitigation for all hazards and implement strategies for coping with hazard impact to ensure that the fundamental safety functions are maintained for all plant states. … 2.24. In accordance with Requirement 22 of IAEA SSR-2/2 (Rev. 1) [1] and Requirement 7 of IAEA SSR-2/1 (Rev. 1) [2] on the application of defence in depth, the operating organization should verify defence in depth for internal fire hazards in-line with corresponding operational limits and conditions (See Appendix **~~A.1.~~ I, section I.1**). Appendix I *2.22. В соответствии с целями глубокоэшелонированной защиты эксплуатирующей организации следует установить процедуры для эксплуатации средств предотвращения, защиты и смягчения последствий всех опасностей и реализовать стратегии по преодолению воздействия опасностей, чтобы гарантировать, что основные функции безопасности поддерживаются для всех состояний станции.* … *("In accordance with the objectives of defence in depth, the operating organization should establish procedures to operate the features for prevention, protection and mitigation for all hazards and implement strategies for coping with hazard impact to ensure that the fundamental safety functions are maintained for all plant states…."* *Translation by Technical officer Kaz Nagashima)*	1. The provisions of these paragraphs do not correspond to the approaches to defense in depth (DiD) specified in SSR-2/1 (rev. 1), since SSR-2/1 does not cover the concept of DiD to external and internal impacts. It is assumed that the design should take into account the loads from such impacts (see also "Considerations on the Application of the IAEA Safety Requirements for the Design of Nuclear Power Plants. IAEA-TECDOC-1791"). In addition, as specified in Annex I, Section I.1, the DiD concept (in relation to fire safety) is a separate concept not related to the approach outlined in SSR-2/1. The text needs to be revised, including the need to define the DiD for fire safety and clarify the role of means for protection against external influences in the DiD, defined in accordance with SSR-2/1. 2.			X	This proposal belongs to section 2 and not to appendix 1. There seems no comments on Appendix I.
Finland 4-1	38	I.1.	General comment	Same type of numbering is used both for chapters and paragraphs (i.e. paragraph II.6 in Chapter II.1 Seismic hazards, but there is also Chapter II.6 Volcanism). This may be confusing in some occasions.	X	The comment was reflected throughout the Appendix I and II.		
France 10	38	I.1.	CONTROL OF COMBUSTIBLE MATERIALS AND IGNITION SOURCES	Paragraphs I.34 to I.41 address the control of ignition sources	X			

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
Germany 1	38	I.1.	*Please make the terms "fire fighting", "fire-fighting" and "firefighting" as well as "fire fighter", "fire-fighter" and "fire fighter" as well as "liquids" and "fluids" consistent in the whole document.*	Editorial for general consistency	X	This comment are reflected on the entire document		This comment needs to be throughout the entire document. "fire fight(ing/er)" and "fire-fight(ing/er) changed to "firefight(ing/er)". Some fluid is changed to liquid. Two fluid is left because it means gas and liquid.
Uzbekistan 1	38	I.3.	Proposed to complete this item at the end with the following text: The entire internal territory of the NPP should be divided into areas of responsibility and assigned to the structural departments of the NPP. Each department is responsible for the cleanliness and compliance with fire safety standards in the assigned territory to the services responsible for the fire safety of the nuclear power plant.	Improving the efficiency of execution of clause I.3.			X	It is true that the proposed practice is effective in some cases. It requires to review on a regular basis considering to the organisational changes or the building of additional facilities. Responsibilities need to be set not only for areas, but also for activities such as equipment and construction. The proposed practice is depended on the organizational structure of NPP. I.11 and I.12 is enough description and appricable provision for the responsibility on fire safety.
UK 17	38	I.4.	Design related aspects of internal fire hazards are provided in IAEA SSG-64 [4 - this standard should be referenced here and the two documents confirmed to be consistent.		X			
Germany 38	38	I.4.	These three objectives of defence in depth should be achieved through a combination of design, installation and operation of fire prevention and protection features; management of fire safety; fire prevention and ~~fire~~ protection mea~~sures~~ns, quality assurance; and emergency arrangements.	The term "means" is more comprehensive covering active and passive means, while measures has always a human aspect	X	I.4.These three objectives of defence in depth should be achieved through a combination of design, installation and operation of fire prevention and protection features; management of fire safety; fire prevention and protection measures; quality assurance; and emergency arrangements. These aspects are addressed in the following paragraphs. Design related aspects of internal fire hazards are provided in IAEA SSG-64 [4].		Deleting "fire" was accepted. To replace the word means is rejected to make consistent with other part.
Hungary 3	38	I.5.	-	The steam caused internal flood should be taken into account. The steam has more dangerous effects than the water as follows: -In case of a steam flood it can cause water flood far away from the place of the break. -Steam is able to strip the cables and cause various short circuits and connection brakes.			X	While it is true that the steam flood causes heavy impact on the plant safety and personnel safety, it is included as a consequent of pipe break (I.69-74) and necessary operational aspect such as ageing management and thorough inspection to reveal damages caused by pressure wave, high humidity, etc. In some cases, additional thermometers have been installed for early detection, but this is a design consideration, not an operational one. Duplication should be avoided in internal flooding. In the pipe break accident in Mihama-3 (9 Aug. 2004), the damage to the equipment were propagated not only within the three floors of the turbine building, but also in the sealed main control room, instrument room, which took considerable time to restore. Far more devastating was the impact on 5 workers who lost their lives and some workers are still suffering from serious injuries. In the light of these matters, we believe that the current description covers the matters that the operating organization should fully implement to prevent these operational aspects.
UK 18	39	I.10.	Propose addition of the following as anotyher paragraph: "The fire mitigation measures shall be identified and designed in accordance with their Nuclear Safety Impact (ref. SSG-30). The hazard analysis should recognize the limitations of fire mitigation systems and active (fire detection and suppression) and passive (fire barriers) measures implemented based on the Nuclear Safety risk."	The fire case cannot solely be on operational control and the protection needs to be sufficient and proportionate	X			
Germany 39	39	I.6.	Plant personnel or personal from outside (e.g. off-site fire brigade) engaging in activities relating to fire safety should be appropriately qualified and trained so as to have a clear understanding of their specific areas of responsibility and how these might interface with the responsibilities of other individuals, and appreciation of the potential consequences of errors.	It is of high safety importance that personal from outside is also appropriately qualified in order to avoid inadmissible actions within area important to nuclear safety.	X	Plant personnel or personnel from outside (e.g. off-site fire brigade) engaging in activities relating to fire safety should be appropriately qualified and trained so as to have a clear understanding of their specific areas of responsibility and how these might interface with the responsibilities of other individuals, and appreciation of the potential consequences of errors.		
France 11	39	I.7.	Personnel should be encouraged and trained to adopt a rigorous approach to their firefighting activities and responsibilities and a questioning attitude in the performance of their tasks, to foster continual improvement.	Training (by means of exercises) is highly helpful to achieve this objective	X	I.7.Plant personnel or personnel from outside (e.g. off-site firefighters) should be encouraged and trained to adopt a rigorous approach to their firefighting activities and responsibilities and a questioning attitude in the performance of their tasks, to foster continual improvement.		
Germany 40	39	I.7.	Plant ~~P~~personnel or personal from outside (e.g. off-site fire brigade) should be encouraged to adopt a rigorous approach to their firefighting activities and responsibilities and a questioning attitude in the performance of their tasks, to foster continual improvement.	Precision similar to that in I.6.	X	I.7.Plant personnel or personnel from outside (e.g. off-site firefighters) should be encouraged and trained to adopt a rigorous approach to their firefighting activities and responsibilities and a questioning attitude in the performance of their tasks, to foster continual improvement.		

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Germany 41	39	I.8.	… Communication should be maintained, and information exchanged between plants (and with the regulatory body) on ~~safety related~~ aspects of fire safety.	Doubling of expression "safety" is not needed. Alternatively, it might be precised: **"… nuclear safety related aspects of fire safety".**	X	The cause of any fire or of the failure or spurious operation of fire protection features that has the potential to affect safety should be established and corrective actions should be taken to prevent a recurrence. The potential implications for fire prevention and protection of operating experience from fires at other plants should be considered. Communication should be maintained, and information exchanged between plants (and with the regulatory body) on nuclear safety related aspects of fire safety.		Took alternative option.
France 12	39	I.9.	Procedures should be established for the purpose of ensuring that amounts and reaction to fire of combustible materials (the fire load) and ~~the numbers of~~ ignition sources (number, intensity, frequency) be minimized in areas containing items important to safety and in adjacent areas that might present a risk of exposure to fire for items important to safety.	It is also important to minimize the reaction to fire of the combustible materials. Ignition sources are not only characterized by their number, but also by their intensity, location and frequency.	X	I.9.Procedures should be established for the purpose of ensuring that amounts and reaction to combustible materials (the fire load) and ignition sources (number, intensity, frequency) be minimized in areas containing items important to safety and in adjacent areas that might present a risk of exposure to fire for items important to safety.		
Russian Federation 21	40	I.13	A comprehensive fire hazard analysis should be performed for the plant in order to do the following: - Demonstrate the adequacy of fire protection means (both passive and active) in place to protect areas identified as important to safety for all plant operational states; - Identify any specific areas where levels of fire protection are inadequate and where corrective measures are necessary; - Provide a technical justification from the recommended practices (see IAEA SSG-64 [4]) for which no corrective measures are taken. The fire hazard analysis should be updated regularly over the lifetime of the plant	Please clarify how to implement this requirement. Do methodological approaches or formalized procedures (algorithms) currently exist that establish the sequence of such a comprehensive fire hazard analysis at the plant? What are the criteria for a missing level of fire protection for specific areas that require corrective action or no corrective action? Please provide here links to existing methods (algorithms) or additional explanations. This recommendation for regular updating of the fire hazard analysis throughout the plant life cycle is not specific. Please provide criteria here determining that this analysis should be performed on periodically basis.	X	I.13.A comprehensive fire hazard analysis should be performed for the plant in order to do the following: –Demonstrate the adequacy of fire protection means (both passive and active) in place to protect areas identified as important to safety for all plant operational states; –Identify any specific areas where levels of fire protection are inadequate and where corrective measures are necessary; –Provide a technical justification from the recommended practices (see IAEA SSG-64 [4]) for which no corrective measures are taken. The fire hazard analysis should be updated regularly over the lifetime of the plant and in case of any plant modifications. Further guidance of the significance of safety classification of Structures, Systems and Components for fire protection systems are given in the SSG-30 [XX].		New document SSG-30 which gives further information is added. Further approaches on fire hazard analysis in nuclear power plants are given in TECDOC-1944.
France 13	40	I.13.	The fire hazard analysis should be updated regularly over the lifetime of the plant especially to reflect any significant changes that occurred.	To introduce recommendation n°I.16	X	The fire hazard analysis should be updated regularly over the lifetime of the plant and in case of any plant modifications. Further guidance of the significance of safety classification of Structures, Systems and Components for fire protection systems are given in the SSG-30 [XX].		Reflected with other MS comment
Germany 42	40	I.13.	The fire hazard analysis should be updated regularly over the lifetime of the plant and in case of any plant modifications.	Not only a periodic regular update is important, but an update in case that plant modifications have taken place is needed.	X			
Germany 43	40	I.14.	(Comment for I.14. and I.15.)	Both paragraphs should be moved under the next headline "IMPACTS OF PLANT MODIFICATIONS ON FIRE SAFETY" as they address impact of plant modifications.	X			
France 14	40	I.16.	Any other modification that could adversely affect the performance of fire protection features, including modifications fire load from those of the fire hazard analysis ~~per floor area~~.	The fire load modifications have to be compared to the fire load parameter of the fire hazard analysis (location reaction to fire… not only "per floor area"	X			
Germany 44	40	I.16.	– Any other modification that could adversely affect the required performance of the fire protection features, including ~~modifications~~ changes in the fire load per floor area.	Clarification	X			
France 15	41	I.17.	Operating licences issued to nuclear power plants usually include a requirement for approved, written procedures for controlling modifications to SSCs. All proposed plant modifications should be scrutinized for their potential effect on area fire loading and fire protection features, since a modification involving non-safety-related SSCs could conceivably change a fire load ~~per floor area~~ or could degrade a fire protection feature whose primary purpose is to protect safety systems.	The fire load modifications have to be compared to the fire load parameter of the FHA (location reaction to fire… not only "per floor area"	X			
Indonesia 42	41	I.18.	A formal review system to evaluate the impacts of modifications on fire safety should be incorporated into the overall modification procedure. Alternatively, a separate procedure should be established and implemented specifically for reviews for fire protection. Modifications should not be commenced until the review has been completed. **Review sholud also include verification of the existing fire protection defence in-depth (DiD) concept with its fire protection measures regarding their suitability and efficiency**.	Plant modifications require a regular verification of the existing fire protection defence in-depth (DiD) concept with its fire protection measures regarding their suitability and efficiency.			X	Comments are understandable. However, the concept is described in I.2-4 and the proposed issues can be emphasized not only in plant modifications but also in all aspects of fire safety, such as fire hazard analysis, quality assurance, etc. Therefore, we avoid adding them here, as it would be redundant and would interfere with other paragraphs.
France 16	41	I.20.	It also should be ensured that physical protection personnel are notified of the modifications to the characteristics of the nuclear power plant's physical layout.	Consistency with terminology used throughout the document. Also, an example could be provided as it is not clear why the sentence is relevant to the "Impacts of modifications on fire safety" section.	X			
Indonesia 43	41	I.21.	Suppose a modification necessitates the removal from service of any of the fire protection features. In that case, careful consideration should be given to the consequently reduced level of protection of item(s) important to safety or hazard prevention, protection, and mitigation features, and should make appropriate temporary arrangements to maintain adequate protection against fires. Upon completing the modification, **it should be inspected to confirm its compliance with the modified design. In an active system, the plant as modified should be commissioned and placed into or returned to normal service, as applicable.**	Reform words so as to facilitate understanding and clear meaning			X	The comment seems to be that the text should be simplified for readability, but we think the current text is more appropriate for the text of the standard as it explains the recommendations more carefully. The current text is sufficient to convey the meaning. The original text should be retained.
Germany 45	42	I.24.	… Such materials should be removed as soon as the activity is completed (or at regular intervals) or ~~will~~ should be temporarily stored in approved containers or storage areas.	Editorial	X			
France 17	42	I.25.	The total fire load ~~due to combustible materials~~ in each area identified as important to safety should be maintained as low as reasonably practicable, with account taken of the fire resistance rating of the compartment boundaries. Records should be maintained that document the estimated or calculated existing fire load as well as the maximum permissible fire load defined in the hazard analysis ~~in each fire area~~.	The maximum permissible fire load parameters are defined in the FHA (it could be per fire area, per room, or more specifically)	X			
Belgium 5	42	I.29.	… The procedures should be **in** accordance with national practice and should provide controls for solids and liquids.	Typographical correction	X			

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Germany 46	42	I.29.	… The procedures should be in accordance with national practice and should provide controls for solids and liquids.	Editorial	X			
France 18	42	I.30.	The use of combustible materials (such as wooden scaffolding) should be restricted. Where wooden materials are permitted, they should be chemically treated or coated so as to be fire retardant. Were solid polymers are, their ability to melt in case of temperature rise should be taken into account - …	Additional proposition	X	–The use of combustible materials (such as wooden scaffolding and polymer joints) should be restricted. Where wooden materials are permitted, they should be chemically treated or coated so as to be fire retardant.		Example of the polymer are added
France 19	43	I.31.	-… - Approved containers or dispensers should be used whenever possible for the transport and use of flammable or combustible liquids. Openings incontainers should be fitted with spring loaded closures. transport of flammable or combustible liquids in open containers should be ~~avoided~~ prohibited -…	Proposition to rephrase	X			
France 20	43	I.31.	Addition of a new paragraph In case of use of pipes to transfer flammable material within the installation, adequate fire safety measures should be taken, in order to reduce the leaks frequency of occurrence and the consequence of its potential inflammation	Proposition of new paragraph			X	While many matters such as leak detection should be considered in the design, operational considerations such as maintenance and walk-down of the pipework concerned are recommended throughout the main body of this guide and the chapter on internal fires in the Appendix and do not require additional inclusion. In addition, usually, the relevant provision is provided by the national regulation for the industrial safety.
Belgium 6	43	I.32.	… such that a fire affecting the storage area would not compromise ~~com-promise~~ safety.	Delete hyphen	X			
Germany 47	43	I.32.	… The procedures should be established in accordance with national practice and should be implemented to ensure ~~that~~ the following:	Editorial	X			
Finland 6	44	I.32.	… storage area would not compromise safety.	Typo: “com-promise”	X			
Indonesia 44	44	I.32.	Compromise	Delete “-“	X			

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Germany 48	44	I.32.	… -Where a supply of flammable gas is needed ~~in-side~~ inside a building for permanent use, it is supplied from cylinders or a bulk storage area safely located outside the building in a dedicated storage area such that a fire affecting the storage area would not ~~com-promise~~ compromise safety.	Editorial	X			
UK 19	44	I.33.	May want to consider adding: "testing of portable electronic equipment."	This is an additional means of controlling/reducing ignition sources	X			

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Germany 49	44	I.34.	(Comment for I.34. and I.35.) Administrative procedures should be established and implemented to control maintenance and modification activities that necessitate the use of a potential ignition source or that might themselves create an ignition source (so-called "hot work").	Addition/introduction of a well-known term, which is used in the next sentence. In I.35 the term ("hot work") could then be deleted	X	I.35.In areas containing items important to safety, work which involves the use of a potential ignition source or which might create ignition sources should be permitted only after consideration of the possible consequences for safety. For example, such work might be prohibited from occurring simultaneously on functionally redundant items important to safety or in the areas containing such items.		We agreed to delete the term from I.35. The word "hot work" is not used in IAEA Safety Glossary but it is appeared in IAEA documents and used in the NPP field globally. In addition, hot work is already used in main body of this draft guide. So we will not define here. Instead, The good examples are introduced in new TECDOC-1944.
France 21	45	I.42.	- ~~Water based~~ fire extinguishing systems;	All fire extinguishing systems, not only water based	X			
Germany 50	46	I.42.	- Access and escape routes ~~for firefighting personnel~~;	Access and escape routes are not limited to firefighters, they need also to be used by shift personnel and any person who needs to escape from a fire area. This statement is mainly valid for on-site access and escape routes. In addition, for access of external firefighters or shift personnel to the plant access routes to the site are needed. Maybe such a statement (which is in principle valid for all internal and external hazards) is additionally needed. The correct place in this document (or in the Appendix needs to be decided).	X			
France 22	46	I.43.	- … - containment of firewater run-off from fighting fires	The fire-fighting strategy should also cover firewater containment	X	–Containment of fire water run-off from firefighting activities;		
Indonesia 45	46	I.43.	High pressure hazard	Delete "-"	X			
Indonesia 46	46	I.43.	fire-fighting or firefighting (Comment for 1.43-1.49)	The concistency to use fire-fighting or firefighting, with or without "-"	X	The comment was reflected throughout the document		
Germany 51	46	I.43.	– Access and escape routes ~~for fire fighters;~~	Clarification: access and escape routes are not limited to firefighters.	X			
Germany 52	46	I.43.	– Areas ~~f~~Fire loadings;	Clarification	X	Area fire loadings		
Germany 53	46	I.43.	– Particular fire hazards, including the possibly reduced capability for firefighting ~~due to external hazards~~ in case of combinations fire hazard combinations, in particular with external hazards (e.g. seismic or extreme wind hazards)	Precision and comprehensiveness of the requirement	X	–Particular fire hazards, including the possibly reduced capability for firefighting due to fire hazard combinations, in particular with external hazards (e.g. seismic or extreme wind hazards);		
France 23	47	I.45.	I.45. If reliance is placed on off-site response, a well-balanced notification protocol for reliability and rapidness should be established between the plant and the off-site firefighter. Designated operating personnel in each shift should be assigned the responsibility to coordinate and liaise with the off-site firefighters and to establish a clear line of authority at the fire scene. Appropriate plant personnel should be designated even in situations in which the off-site response is supplementary to a primary response by a qualified on-site fire brigade. A possible delay in the off-site response should be taken into account in the fire hazard assessment	Proposition to include a possible delay on the off-site fire response while performing the fire hazard analysis	X			

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Russian Federation 22	47	I.48.	Members of the on-site fire brigade should be physically capable of performing firefighting duties and should attend a formal programme of fire-fighting training prior to assignment to the plant fire brigade. Regular training (routine classroom training, fire-fighting practice and fire drills) should be provided for all on-site fire brigade members. Special training should be provided for fire brigade leaders to ensure that they are competent to assess the potential safety consequences of a fire and advice control room personnel.	Please clarify why the recommendations to training of personnel only apply to the plant fire departments (on-site fire brigade)? The personnel of the external fire service performs tasks of extinguishing fires similar to the fire department at the plant. Shouldn't the employees of an external fire department be able (physically) to carry out their firefighting duties and have the required qualifications?	X	I.48.Members of the firefighter should be physically capable of performing firefighting duties and should attend a formal programme of firefighting training prior to assignment to the plant firefighters. Regular training (routine classroom training, firefighting practice and fire drills) should be provided for all on-site firefighter members. Special training should be provided for firefighter leaders to ensure that they are competent to assess the potential safety consequences of a fire and advice control room personnel.		"on-site" was removed from the first sentence but the nuclear regulator and operating organization cannot rely on off-site organization in many cases. The recommendation on training should be applied for on-site firefighters.
Germany 54	47	I.48.	… Special training should be provided for fire brigade leaders to ensure that they are competent to assess the potential safety consequences of a fire and provide advice to control room personnel.	Editorial	X			
Russian Federation 23	48	I.52.	Fire protection features (including preventive features) are not generally classified as hazard prevention, protection and mitigation features and thus they might not be subject to the rigorous qualification requirements and the associated quality assurance programme applied to hazard prevention, protection and mitigation features. However, fire has the potential to fail multiple systems and thus to pose a threat to safety, and therefore the active and passive fire protection measures should be considered as important to safety. An appropriate level of quality assurance should therefore be applied to fire protection features.	In this recommendation, criteria for the classification of active and passive fire protection equipment according to their influence on plant safety is missed (such criteria are not provided). For this reason, implementation of this recommendation will lead to that all elements of fire protection are classified as elements important for safety (regardless of which technological systems these fire-fighting means protect and how the failure of technological systems affects the safety functions of the plant). Please clarify, how, in this case, a principle of the combination of active and passive fire protection means at the plant will be implemented?	X	I.52.Fire protection features (including preventive features) are not generally classified as hazard prevention, protection and mitigation features and thus they might not be subject to the rigorous qualification requirements and the associated quality assurance programme applied to hazard prevention, protection and mitigation features. However, fire has the potential to fail multiple systems and thus to pose a threat to safety, and therefore the operating organization should apply appropriate level of quality assurance to active and passive fire protection measures according to their influence on plant safety.		Agree. The text was modified. Further approaches on the active and passive fire protection means in nuclear power plants are given in TECDOC-1944.
France 24	48	I.52.	QUALITY ASSURANCE FOR MATTERS RELATING TO FIRE SAFETY	Wording	X			
France 25	48	I.53.	Potential sources of internal explosions might be related to the use or the generation of explosive gases and compressed gases	Non inflammable or explosive compressed gases are also a potential source of explosion (BLEVE, rapid gas expansion)	X			
UK 20	48	I.53.	The operating organization should consider various explosion sources when preventing, detecting, and mitigating internal explosions. Potential sources of internal explosions might be related to the use or the generation of explosive gases. There is also a potential for dust or oil mist explosions although these are judged less likely. Additionally, events leading to an energy release similar to an explosion might also come from high energy arc flashes in electrical equipment. Explosion events might also occur in conjunction with other hazards, such as fire and a release of fluids stored at high pressure can result in significant overpressure events having effects similar to explosions.	Hazards such as this having similar effects to explosions should also be considered.	X	I.53.The operating organization should consider various explosion sources when preventing, detecting, and mitigating internal explosions. Potential sources of internal explosions might be related to the use or the generation of explosive gases. and compressed gases. There is also a potential for dust or oil mist explosions although these are judged less likely. Additionally, events leading to an energy release similar to an explosion might also come from high energy arc flashes in electrical equipment. Explosion events might also occur in conjunction with other hazards, such as fire. and a release of fluids stored at high pressure can result in significant overpressure events having effects similar to explosions.		
France 26	48	I.55.	Internal fires and internal explosions of flammable gases are similar hazards and, in developing the management for internal explosions, the recommendations provided for internal fires	See above comment			X	I.59 has already mentioned the use of flammable gases potential to create explosion (duplication).
France 30	49	I.53.	Additional recommendation Administrative procedures should be established and implemented to control the integrity of compressed gas equipment to prevent bursting hazard, gas leaks …	Additional recommendation on an important prevention measure concerning equipment containing compressed gas	X	I.53.The operating organization should consider various explosion sources when preventing, detecting, and mitigating internal explosions. Potential sources of internal explosions might be related to the use or the generation of explosive gases and compressed gases. There is also a potential for dust or oil mist explosions although these are judged less likely. Additionally, events leading to an energy release similar to an explosion might also come from high energy arc flashes in electrical equipment. Explosion events might also occur in conjunction with other hazards, such as fire and a release of fluids stored at high pressure can result in significant overpressure events having effects similar to explosions.		The compressed gas is clearly included.
France 27	49	I.56.	Active and passive protection systems (such as gas detectors, blast doors, blowout panels, room and area ventilation systems, venting safety devices) should be subject to the inspection, maintenance and testing programmes identified in the hazard management.	Venting safety devices are an example of prevention systems	X	The operating organization should control and/or limit personnel access in areas where explosion hazards could occur such as main and auxiliary transformer areas. This includes the prevention measure of combustible materials as described in I.23.-I.41.		
Germany 55	49	I.59.	Control of ignition sources is a ~~the~~ main prevention measure for internal explosions. …	Preventing the formation of an explosive gas atmosphere in a room or within a system is also a main prevention measure.	X			
France 28	49	I.61.	Additional recommendation There is a high potential of an explosive cloud forming if a leak occurs on a flammable gas pipes. Checking the integrity of these pipes (corrosion, supports, signs of impact…) is a fundamental leakage prevention measure.	Additional recommendation on an important prevention measure concerning flammable gas pipes	X	I.61.The operating organization should control and/or limit personnel access in areas where explosion hazards could occur such as main and auxiliary transformer areas. This includes the prevention measures of combustible materials as described in I.23.-I.41.		The operational provision such as maintenance or control of flammable gas are provided in previous sub-section on the internal fire hazards.
France 29	49	I.61.	Additional recommendation Administrative procedures should be established and implemented to control the gas concentrations of flammable atmosphere (flammable vessel head space, gas sampling …)	Additional recommendation on an important prevention measure concerning flammable atmosphere	X	I.61.The operating organization should control and/or limit personnel access in areas where explosion hazards could occur such as main and auxiliary transformer areas. This includes the prevention measures of combustible materials as described in I.23.-I.41.		The operational provision such as maintenance or control of flammable gas are provided in previous sub-section on the internal fire hazards.
Indonesia 47	50	I.63.	**Adding a new line in para I.63/a new para after I.63. The operating organization should take into account a monitoring system, feedback of operational experience, including ageing effects.**	In line with para. I.63, all SSCs will undergo the ageing degradation. A regular inspection should be performed to ensure that all SSCs will not generate a missile. For example, high-pressure valve, reactor pressure vessel, and soon.			X	1.The proposed text is general and not specific for internal missiles. 2.Duplication with para 7.4, para 9.2 and para I.63 should be avoided.

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
UK 21	50	I.63.	Operating procedures should be developed and implemented for identified and characterized internal missile sources to prevent internal missile hazards and include the following: Regular plant area walkdowns to detect potential missile hazards; Observation of personnel interacting with potential missile sources; Rotating machinery inspections including means to limit the rotational speed and monitoring and surveillance measures; Regular turbine blade inspections for turbine blade degradation; Inspection of storage areas of high-pressure gas bottles and the integrity of the gas bottles themselves; In the areas where SSCs are located, inspection of the pressure vessels and of high energy valves to detect possible flaws (for example the presence and good tightening of all bolts fastening the cap of the valves on their bodies should be checked and welds inspected).	Inspection of welds is important to ensure any assumption of the impact regarding pressure vessel missiles is valid (i.e. welds do not have any defects)	X			
Germany 56	50	I.63.	In the areas where SSCs important to safety are located, inspection of the pressure vessels and of high energy valves to detect possible flaws (the presence and good tightening of all bolts fastening the cap of the valves on their bodies should be checked).	Precision of scope	X			
Germany 57	51	I.69.	PIPE BREAKS ~~(PIPE WHIP AND JET EFFECT AND FLOODING)~~	In the corresponding paragraphs also many other effects of pipe breaks are addressed. Text in brackets is misleading, we suggest to delete	X	PIPE BREAKS (INCLUDING SECONDARY CONSEQUENCES SUCH AS PIPE WHIP, JET EFFECT, FLOODING AND PRESSURE BUILD UP)		Added other effects by other MS comments
Belgium 7	51	I.70.	… pipe hang~~e~~rs, …	Typographical correction (cf. I. 72)	X			
France 31	52	I.74.	If a pipe break occurred and the plant returned to a safe state, a thorough inspection should be performed to reveal any damage that might have been caused by the different impacts of the break in its surrounding, including the internal de-pressurization wave, high humidity, spray, and high temperature in the room concerned.	It's necessary to define a criteria so that conducting such an inspection became a requirement.	X	I.74.If a pipe break occurred and the plant returned to a safe state, a thorough inspection should be performed to reveal any damage that might have been caused by the different impacts of the break in its surrounding, including, according to the needs and the importance of the rupture, the internal depressurization wave, high humidity, spray, and high temperature in the room concerned.		Agreed. Reflected with other MS comments
ENISS 2	52	I.74.	"*If a pipe break occurred and the plant returned to a safe state, a thorough inspection should be performed to reveal any damage that might have been caused by the different impacts of the break in its surrounding, including , according to the needs and the importance of the rupture, the internal depressurization wave, high humidity, spray, and high temperature in the room concerned.* "	This point seems too precise. It forces a minimum of examination including the effects of the depressurization wave in a pipe after the rupture. For ENISS, it isn't necessary to do this type of examination or calculation after every breakup. Otherwise, specific guidance is expected to give criteria triggering such investigations.	X	I.74.If a pipe break occurred and the plant returned to a safe state, a thorough inspection should be performed to reveal any damage that might have been caused by the different impacts of the break in its surrounding, including, according to the needs and the importance of the rupture, the internal depressurization wave, high humidity, spray, and high temperature in the room concerned.		
France 32	52	I.75.	Internal flooding at a nuclear power plant might be caused by leakages, pipe breaks, tank breaches or overflows, open valves or the use of fire-fighting water	Overflows of tanks are common causes of flooding	X			
Germany 58	52	I.76.	Enhanced operational controls during construction, maintenance or inspection activities should be implemented during times of increased flooding risks (e.g. temporary water hoses during outage periods, …	Editorial	X			
France 33	52	I.79.	(verification that these systems can provide the adequate draining flowrate)	Caution, from now we are unable to check such a point on non pre fitted pipes.	X			The bracket sentence was removed
ENISS 3	52	I.79.	"*General housekeeping rules control debris in drain systems, but inspections and plant walk downs should check the general good condition of drainage systems (~~verification that these systems can provide the adequate draining flowrate~~). Inspections or walk downs should also ensure that flood doors are properly closed and secured, flood barriers are in place as designed, and flood mitigation measures are not compromised by the lack of sealing for the drill holes, or lack of alternative barriers during the maintenance.* "	General housekeeping rules, inspections and plant walk downs could ensure the specified good condition of a structure, system or component as far as this is possible by observation and assessment on site and related information. From ENISS point of view, this cannot be used to determine the sufficient amount of drainage in a drainage system. Therefore, this sentence is misleading. ENISS proposes to delete the sentence.	X			
UK 22	53	I.81.	Analysis of the hazards associated with heavy load drop should be performed in accordance with the recommendations for heavy load drops provided in paras 4.170–4.183 in SSG-64 [4]. The prevention of structural collapses and falling objects from crane lifts is first and foremost realized by a demonstrably conservative design. Nevertheless, falling objects impacts from cranes and other lifting equipment should be considered as a potential hazard. Non-crane related load drops from heights might be related to mishandling of other heavy objects at height.		X			
France 34	53	I.83.		Compliance with load rigging and handling procedures is essential for managing load drop hazard and should be reflected in the paragraph. Also, as mentioned for some other hazards, the suitable qualification and training of involved personnel is part of the operational hazard management.	X	I.83.The operating organization should establish procedures for planning hoisting and lifting activities. Planning of these activities should include involvement of suitably qualified personnel, risk assessments, pre-planned lifting routes, associated lifting equipment, additional supervision, defining of restrictions, and interlocking of lifting routes, as applicable. The hazardHazard management should ensure that in appropriate timings after these activities, or periodically, the following items are consistent with design documents such as the code or standards referenced in licensing or in the design basis:		Comment reflected
UK 23	53	I.83.	The operating organization should establish procedures for planning hoisting and lifting activities. Planning of these activities should include involvement of suitably qualified personnel, risk assessments, pre-planned lifting routes, associated lifting equipment, additional supervision, defining of restrictions, and interlocking of lifting routes, as applicable. The hazard management should ensure that in appropriate timings after these activities, or periodically, the following items are consistent with design documents such as the code or standards referenced in licensing or in the design basis: (i) Calculations for crane and lifting devices, or (ii) Procedures used to implement inspections such as load testing, visual testing, dimensional testing, non-destructive testing of major load carrying welds, and critical areas for the lifting devices.	Given the significance of administrative arrangements in managing risk of lifting operations, the involvement of specifically trained and qualified personnel should be emphasized.	X	I.83.The operating organization should establish procedures for planning hoisting and lifting activities. Planning of these activities should include involvement of suitably qualified personnel, risk assessments, pre-planned lifting routes, associated lifting equipment, additional supervision, defining of restrictions, and interlocking of lifting routes, as applicable. The hazardHazard management should ensure that in appropriate timings after these activities, or periodically, the following items are consistent with design documents such as the code or standards referenced in licensing or in the design basis:		

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Belgium 8	53	I.86.	… areas and structures where collapses might **occur** and objects might fall.	Missing word?	X			
France 35	53	I.86.	The operating organization should establish operating procedures for performing regular walkdowns and inspections of areas and structures where collapses might occur and objects might fall.	Missing word	X			
Germany 59	53	I.86.	… The operating organization should establish as well operating procedures for performing regular walkdowns and inspections of areas and structures where impact of the load with an SSC during its movement via handling (horizontal or/and vertical axis) might happen.	It is recommended not only to address load drop but also the collision risk by impacting load. We suggest to add this as a new issue	X			
Indonesia 48	54	I.92.	Within hazard management, identification of potential electromagnetic interference hazards should account for all potential sources during normal or **regular and specific** ~~special~~ maintenance periods or other plant activities	Should be checked in other SSG related with the used of special maintenance	X			
France 36	54	I.93.	The identification process for electromagnetic interference hazards should include the potential location of permanent and temporary sources of electromagnetic interference, where possible, and focus on sources close to sensitive equipment. The integrity of EMI prevention or mitigation features should be checked after maintenance operations on electromagnetic interference sources or sensitive equipment (e.g., cable or equipment shielding, cable separation, earthing)	It is important to maintain the operational function of these features	X	I.93.The identification process for electromagnetic interference hazards should include the potential location of permanent and temporary sources of electromagnetic interference, where possible, and focus on sources close to sensitive equipment. The integrity of electromagnetic interference prevention or mitigation features should be checked after maintenance operations on electromagnetic interference sources or sensitive equipment (e.g. cable or equipment shielding, cable separation, earthing)		
Germany 60	54	I.94.	… These controls should include the location and timing of maintenance and construction activities, and exclusion zones or other administrative or operational controls to minimize an electromagnetic interference hazard, including wireless equipment used at the plant, equipment used for maintenance and repair activities, and measuring devices.	Editorial comment	X			
France 37	55	I.91.	Addition of a new paragraph after I.95 I.9x The identification process for electromagnetic interference hazards should include the identification, the localization of the sensitive equipment regarding the electromagnetic hazard.	This paragraph is rightly called “electromagnetic interference” and not “electromagnetic disturbances” but only sources are described. Electromagnetic interference is a problem of compatibility between the sources and the sensitive equipment. This paragraph should also focus on the sensitive equipment, by at least adding the proposed text.	X	I.91. All potential sources of electromagnetic interference (EMI)*7 and sensitive equipment in the plant should be identified. Significant sources of electromagnetic interference can be eliminated by suitable design, construction, and maintenance of instrumentation and control systems and also of power supply systems and their components. Other potential sources might include maintenance or construction equipment and activities such as portable arc welding equipment, portable radio communications or telephones brought into the nuclear plant, and ground penetrating radars used for ground surveys. *7. If the disturbance is in the high or radio frequency ranges, it is sometimes referred to as radio frequency interference (RFI), but in the context of this document, electromagnetic interference is used as the generic term. and I.94.The identification process for electromagnetic interference hazards should contain controls for portable or temporary electromagnetic interference sources. These controls should include the location and timing of maintenance and construction activities, and exclusion zones or other administrative or operational controls to minimize an electromagnetic interference hazard, including sensitive equipment such as digital instrumentation and control systems, wireless equipment used at the plant, equipment used for maintenance and repair activities, and measuring devices.		Reflected in para. I 91 and I.94
UK 24	55	I.96.	Should be: Release of hazardous substances inside the plant and on-site	The text covers both in plant and on-site.	X			
Canada 18	55	I.96.	However, the operating organization should consider the effects of hazardous substances on control room operators ~~performing important actions,~~ and ~~in particular on~~ the habitability of control centers ~~the main control room~~.	To improve the clarity and apply right terminology.	X	Releases of hazardous substances inside the plant and on-site are generally viewed as unlikely, limited in extent if they occur, and can be avoided before they affect essential plant functions. However, the operating organization should consider the effects of hazardous substances on control room operators and the habitability of control room.		Make consistent with Glossary
France 38	55	I.98.	The need for maintaining personal protective equipment on-site (e.g. breathing apparatus, protective clothing) should be considered to allow operators to move to safe plant locations or perform safety related actions	Safety related actions outside the plant control room may be needed	X			
France 39	55	I.99.	Protection and mitigation against the effects of internal release of hazardous substances is largely ensured by passive means (e.g. redundancy of rooms or systems) or administrative procedures~~).~~	Administrative procedures may not qualified as “passive means”	X			
Indonesia 55	55	I.99.	…**The operating organization should consider to identify and manage any other plant specific hazards that may arise such as radon gas, oil and other spills, dust, sharp objects, etc.**	Other hazards that may occur as plant specific should also be considered. For example: the existence of radon gas, oil spills, dust, sharp objects, etc. These might provide smaller impact, yet hazard risk analysis should be comprehensive.			X	Operational measures for prevention and mitigation is covered by other paragraph such as I.97. Duplication should be avoided. The proposed provision seems also aiming to capture more site specific internal hazards. However, it is out of the scope of this guide, as stated in para 1.11.
Finland 4-2	56	II.1.	General comment	Same type of numbering is used both for chapters and paragraphs (i.e. paragraph II.6 in Chapter II.1 Seismic hazards, but there is also Chapter II.6 Volcanism). This may be confusing in some occasions.	X	Numbering to be taken off the sub-headings in the Appendices		
Indonesia 49	56	II.2.	To ensure that seismic hazards are included in the hazard management, the operating organization should consider and include specific actions derived from the design and assessments performed as recommended in Refs [6, 25]. The operating personnel should understand the importance of specific seismic safety design and analyze results and safety-related components and their potential failure modes, interactions, and challenges to redundancies. **The operating organization must ensure that the hazard management incorporates a seismic monitoring system connected to SSCs that are important to safety. In an earthquake seismic hazard beyond the SSE design, the operating personnel can shut down the plant.**	Important to add seismic monitoring system in hazard management procedures.			X	This comment has been considered with other comments for paragraph II.3, but shutdown is just part of the response. The proposed recommendation is already expressed with other words in other paras. The original text is in contradiction with the text of para II.3 of this Draft Standard.

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UK 25	56	II.3.	The operating organization should develop an earthquake response plan for pre-event and post-event actions. These actions should be documented as procedures that describe shortterm and long-term actions and include specific walkdowns for SSCs to determine the status and functionality of hazard protection and mitigation features. Procedures should account for challenges introduced by the seismic event such as safe access to site areas and consequential hazards when specifying post hazard actions. The initiation of these procedures should be based upon indications from the seismic monitoring system, information from off-site geological monitoring centres, or ground motion experienced by the operating personnel. Insights for plant shutdown are provided in Ref. [26]. The indications from the seismic monitoring system should be calibrated to highly sensitive seismographs and strong motion accelerographs in regional and/or national monitoring networks to worldwide broadband seismograph networks, if necessary [27].	For seismic events in particular, it is important to recognize the challenges introduced by the post-hazard environment and how this may constrain post event actions.	X			
France 40	56	II.4.	Addition of a new paragraph between II.3 and II.4 The potential damage of SSCs important to safety caused by mechanical interactions (fall, rocking) or induced flooding due to the failure of non-seismically-designed equipment should be taken into account Procedures should be written and training should be made regarding these risks, particularly to ensure that the lifting devices remain in their safe position and scaffoldings are well fixed. Specific walkdowns should be made during the lifetime of the plant to verify the installation against this risk.	The risk of mechanical interactions or induced floodings due to failure of a non-seismically designed equipment during an earthquake is not developed			X	Implied by para II.3 and II.4, and throughout the text (duplication).
France 41	56	II.4.		The main pre-event action is to maintain the seismic qualification of equipment required to perform safety functions during and/or after an earthquake. This requirement should be met mainly by the implementation of an inspection programme in order to identify potential deviations such as defects due to ageing or inadequate systems configuration following maintenance or modification	X	II.4.The operating organization should maintain the seismic qualification of equipment required to perform safety functions during and/or after an earthquake. This could be achieved through implementation of an inspection programme in order to identify potential deviations such as defects due to ageing or inadequate systems configuration following maintenance or modification. As a pre-event action, the operating organization should observe the principles of good housekeeping to ensure that earthquake damage is not propagated or increased by temporary and/or loose items. This action should include securing items (through seismic restraints) that might cause damage through seismic interactions with items important to safety during a seismic event. If a seismic event and a subsequent tsunami are defined as a credible combination of hazards, the operating organization should consider the response and ensure the plant is adequately protected against the tsunami (for example, flood protection gates being in place).		=> reflect to the new draft
Finland 5	56	II.7.	General comment Please consider adding, e.g., after II.7: The use of local seismic ~~seismic~~ instrumentation networks for gathering geological information on the risks in the area in the long run and for better understanding of the potential movements of the bedrock is considered, e.g., in Ref. [27].	The need for the seismic monitoring system for initiation of the pre-event and post-event procedures is mentioned in Appendix II.3. However, it could be mentioned that in addition to the plant seismic monitoring system the IAEA Guides, e.g. SSG-9, recommend also the installation of a site near region seismic measuring station network for maintaining the site-scale and regional-scale geological interpretation and models (capable faults etc.) with data from the seismic monitoring network as well as information of the past seismic events can give good basis for systematic and comprehensive seismic risk assessment.	X	II.7.As appropriate, communication protocols with off-site geological monitoring centres should be established for redundant seismic notifications. The data from regional and/or national monitoring networks described in para II. 3 can be used for periodic updating of hazard management.		II.3 has already stated that; "The indications from the seismic monitoring system should be calibrated to highly sensitive seismographs and strong motion accelerographs in regional and/or national monitoring networks to worldwide broadband seismograph networks, if necessary, as described in Ref. [27]. " While the database from these regional instrumentation network might be valuable for sight selection, design, or safety assessment, it is enough to introduce these instruments for the operational use in the operational guide. Therefore, we decided to add the sentence to indicate that these instrumentation can be used for assessment.
Finland 7	57	II.8.	In areas where tsunami hazards could occur, the emergency diesel generators should not be located at the seafront. The emergency diesel generators should be located inland at higher elevations, well above the design-basis extreme tsunami flood levels to provide protection from flooding and to ensure adequate onsite emergency electrical power supply for nuclear power plants in case of tsunami floods. In addition, the electric power distribution system, as well as the necessary safety systems, should be adequately protected against flooding and mechanical effects of the tsunami.	This lesson learned is proposed to be added in Appendix II into the connection of paragraphs II.8 and II.9 or in some other relevant context to provide an example of a practical hazard management measure, which can be solved by plant design, but if not done, requires specific attention in preparedness to external hazards. In Fukushima it was a major problem that the plant internal electric power distribution system was not functioning when external power was restored.	X	II.8.To ensure that external floods (storm surges and tsunamis) are included in hazard management, the operating organization should consider and include specific actions derived from the results of the design and the assessments performed on the basis of the recommendations provided in DS498 [5]. For example, in areas where tsunami hazards could occur, hazard design assessment might identify risks to the emergency generators and electrical distribution systems. Since, the impacts of tsunamis and storm surges are not limited to flooding, in coastal areas the extensive and sudden movement of soft sediments or biological material has the potential to affect the water intake system requiring actions by operating personnel.		The recommendation for design are removed to avoid the duplication with other safety standard's role.
Finland 8	57	II.8.	General comment Please consider adding, e.g., at the end of para II.4 or II.11: The impacts of tsunamis and storm surges are not limited to flooding. In coastal areas the extensive and sudden movement of soft sediments or biological material may require management actions at water intake system.	Please note that the impacts of tsunamis and storm surges are not limited to flooding. In coastal areas the extensive and sudden movement of soft sediments or biological material may require management actions at water intake system.	X	II.8.To ensure that external floods (storm surges and tsunamis) are included in hazard management, the operating organization should consider and include specific actions derived from the results of the design and the assessments performed on the basis of the recommendations provided in DS498 [5]. For example, in areas where tsunami hazards could occur, hazard design assessment might identify risks to the emergency generators and electrical distribution systems. Since, the impacts of tsunamis and storm surges are not limited to flooding, in coastal areas the extensive and sudden movement of soft sediments or biological material has the potential to affect the water intake system requiring actions by operating personnel.		Reflected with another comment
Indonesia 50	57	II.9.	Since external floods by storm surges or tsunamis can be forecasted to a certain extent, the operating organization should establish a warning system for external floods, including storm surges and tsunamis, and communication protocols with national and local agencies that provide forecasts, where available. The management for this hazard should take into consideration that the capability and available lead time in these forecasts might differ significantly (e.g., storm surge vs. tsunami, far-field tsunami vs. near-field tsunami). **The Operating Organization should ensure that hazard management considers evacuation routes for personnel in the event of a tsunami**	It is not state in the passage about evacuation route.	X	Where appropriate, the operating organization should ensure that hazard management considers evacuation routes and safe refuges for personnel in the event of a tsunami.		Agreed with modification

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Indonesia 51	58	II.13.	~~Flotsam~~ **debris**	Familiar to use debris rather than flotsam. Flotsam original come from the sea. Flotsam is defined as debris in the water that was not deliberately thrown overboard, often as a result from a shipwreck or accident.	X	II.13.Before the flooding event, the site should be inspected for loose equipment or structures that might become floating debris and cause structural loading if they impact structures or equipment during the event. If possible, these items should be removed from the site, or secured as to minimize hazard propagation during the flood, including restraining items that might become buoyant during an extreme flooding event and block drainage outlets or access routes.		changed to "floating debris"
Finland 9	58	II.15.	The operating organization should ensure personnel safety during the flooding event by clearly communicating the expected water levels, and the potential for overtopping of dykes, dams, or seawalls due to the combined effect of sea level variations and wind-generated waves.	The possibility and amount of overtopping is the combined effect of the sea level and local wave field, not only the sea level.	X	II.15.The operating organization should ensure personnel safety during the flooding event by clearly communicating the expected water levels, and the potential for overtopping of dykes, dams, or seawalls due to the combined effect of sea level variations and wind-generated waves.		
Indonesia 52	59	II.21.	Before the flooding event, site water levels should be monitored **continuosly**	Add world continuosly	X			
UK 26	59	II.28.	Where installed, the operating organization should regularly check the site meteorological systems to ensure consistency with measurements by specialized meteorological organizations as well as determining localized weather conditions, if necessary. For example, a plant located in a narrow valley can be affected by a localized extreme wind that cannot be identified by widearea weather forecasts. There are cases where this extreme wind can be aggravated due to the change of the wind direction. This check can be done in the periodic update of management programmes (see Section 7).	Sites will not necessarily have meteorological equipment.	X	The operating organization should regularly check the site meteorological systems, where installed, to ensure consistency with measurements by specialized meteorological organizations...		
Indonesia 53	61	II.34.	· To ensure that other extreme meteorological conditions including extreme air temperature and humidity, extreme water temperature, snowpack, freezing precipitation and frost related phenomena, and lightning are included in the hazard management, the operating organization should consider and include specific actions derived from the results of the design and assessments performed on the basis of the recommendations provided in DS498 **extremes of air pressure** · **extremes drought (low river or lake water level)** · **low sea water level** **sandstorm and dust storm**	These conditions could also impact the safe operation of NPP	X	II.34.To ensure that other extreme meteorological conditions including extreme air temperature and humidity, extreme water temperature, snowpack, freezing precipitation and frost related phenomena, and lightning are included in hazard management, the operating organization should consider and include specific actions derived from the results of the design and assessments performed on the basis of the recommendations provided in DS498 [5]. This should include a full consideration of other effects of these extreme meteorological conditions including: –low sea water, which may be caused by an extremes of air pressure; –sandstorm and dust storm as an immediate issue; –low river or lake water levels from a drought from longer term extreme weather fluctuations.		Agreed with some editorial improvement
UK 27	62	II.35.	The operating organization should establish communications protocols and standards with national and regional meteorological organizations to be properly warned of any extreme meteorological conditions, including their possible duration. This information should be supplemented as necessary by the use of the site's meteorological systems, where installed. For example, the localized lightning strikes for some plants can be notified by a regional meteorological forecasting service which implement credible monitoring of the wide-area atmospheric stability.	site may not have meteorological equipment	X	II.35.The operating organization should establish communications protocols and standards with national and regional meteorological organizations to be properly warned of any extreme meteorological conditions, including their possible duration. This information should be supplemented as necessary by the use of the site's meteorological systems, where installed and available. For example, the localized lightning strikes for some plants can be notified by a regional meteorological forecasting service which implement credible monitoring of the wide-area atmospheric stability.		Agreed with modification
Finland 10	63	II.46.	When subsequent persistent precipitation is defined as a credible combination of hazards with extreme low temperatures, the operating organization should ensure that installed drains have been properly cleared to prevent the compound effect, e.g. due to clogging by ice.	At low temperatures, precipitation may be in solid form, i.e., snowfall rather than rainfall. In addition, after a low-temperature period drains may be clogged by ice. Para II.46 could be rewritten more explicitly. Does the combination of persistent precipitation and extreme low temperature refer to snowfall or to rainfall after a period of cold weather with the possibility of clogging of drains by ice?	X	II.46.When subsequent persistent precipitation is defined as a credible combination of hazards with extreme low temperatures, the operating organization should ensure that installed drains have been properly cleared to prevent the compound effect, e.g. due to clogging by ice. Additionally, the operating organisation should consider the potential effects of blocked drainage channels and how these could be mitigated.		Reworded - similar change from other MS comment - and also to recognise the implications of potential blocked drainage.
UK 28	63	II.46.	When subsequent persistent precipitation is defined as a credible combination of hazards with extreme low temperatures, the operating organization should ensure that installed drains have been properly cleared to prevent the compound effect, e.g. due to clogging by ice.	At low temperatures, precipitation may be in solid form, i.e., snowfall rather than rainfall. In addition, after a low-temperature period drains may be clogged by ice. Para II.46 could be rewritten more explicitly. Does the combination of persistent precipitation and extreme low temperature refer to snowfall or to rainfall after a period of cold weather with the possibility of clogging of drains by ice?	X	II.46.When subsequent persistent precipitation is defined as a credible combination of hazards with extreme low temperatures, the operating organization should ensure that installed drains have been properly cleared to prevent the compound effect, e.g. due to clogging by ice. Additionally, the operating organisation should consider the potential effects of blocked drainage channels and how these could be mitigated.		Reworded - similar change from other MS comment - and also to recognise the implications of potential blocked drainage.
Germany 61	64	II.47.	When ~~reducing~~ reduced firefighting capability of an internal fire is defined as a credible ~~combination of hazards~~ consequential effect …	Editorial, grammar; and reduced firefighting capability is not a consequential hazard and thus not a hazard combination but only a consequential effect. **Additional recommendation:** Similar texts for other hazards should also be checked and adapted.	X	II.47. If a reduction in the installed firefighting capability available to suppress potential internal fires is identified as a credible consequential effect of low temperatures hazards with outside freezing conditions, then the operating organization should maintain the defence in depth by alternative firefighting measures.		Reflected with other MS comment
UK 29	64	II.53.	Suggest adding: "These effects may also be caused by non-volcanic initiators, such as particulates in desert regions. "	To help ensure all initiators and consequences are considered.	X	II.41.In cases of sandstorm and dust storm, the recommendation in para II.53 for HVAC filter change should be considered. In addition, the recommendation in II.29 for securing equipment outside of buildings in extreme wind event should be considered to prevent object from becoming missile.		New paragraph added.
France 42	64	II.58.		The guidance does not seem relevant or applicable: the use of flammable or explosive materials may be part of the normal process of nearby industrial facilities. Also operating organizations of these facilities are not expected to use the present guide.	X	II.58.Communication protocols and standards should be established with off-site agencies and organizations to notify the operating organization when activities involving combustible or explosive materials are performed. Because of the potential increase of the risk of external fires during these activities, these protocols and standards will require off-site organizations involved in these activities in relevant proximity to the site to notify the operating organization in sufficient time before the start of such activities and provide information on the type, route and duration of the intended activities. This allows the operating personnel to prepare for an accident that could involve combustible or explosive materials, or inadmissibly impair SSCs and impact the site's external fire mitigation strategies.		We have made a change in the text as shown, to try to address the comment

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
Germany 62	65	II.58.	The recommendation in para. II.58 for communication with off-site organizations for external fires should also be considered for external explosions.	Editorial comment: This paragraph should also have a numbering.	X	II.67.In the case of a notification about potential off-site explosions or shockwaves, heat flux, smoke and heated gases, ground and other vibratory motions and blast and missiles from explosions, the operating organization should notify the on-site firefighters and emergency response personnel about the potential hazard. This could result to the deployment of on-site emergency response and firefighting equipment to a standby readiness condition. The recommendation in para. II.58 for communication with off-site organizations for external fires should also be considered for external explosions.		The sentence was included in II.67.
France 43	65	II.64.	The operating organization should regularly inspect and maintain and repair, if necessary, all engineered structures and barriers (e.g. firebreaks, paved roads, earth mounds, dykes, walls, surrounding building structures, land clearing)	Vegetation control or land clearing around building is a means to prevent the spreading of external fires in wooded areas.	X	II.65.In order to minimize the impact of external fires from inadmissibly affecting the plant site, the operating organization should regularly inspect and assess the engineered structures and barriers at the site or in close proximity to the site boundary. The scope of the inspection should include the effect of both permanent and temporary accumulations of combustible material, and the presences of vehicles. If appropriate this should lead to vegetation control or land clearing around buildings and site boundaries.		Change made instead to para II.65
Belgium 9	65	II.65.	… the engineered structures and barriers at the site,, or in close proximity to the site boundary ..	Delete double comma	X			
Israel 2-2	66	II 69.	We would like to suggest to appropriately emphasize in these (or other relevant) paragraphs the hazards and the required hazards management related to radioactive (and other dangerous) gases and liquids released inadvertently from neighboring nuclear installations, such as multi-unit plant sites or adjacent sites.	Completeness	X	II.69.Operating procedures should be developed and implemented to properly monitor hazardous substances in the air, isolate the affected buildings or areas, ensure personnel habitability, cooling purposes and operability of emergency diesel generators by ventilation realignments, and protect control room operators. These should cover release of hazardous materials from the plant being operated and from other units on a multi-unit site, as well as any credible external sources of hazardous gaseous release.		Change suggested to paragraph II.69 to cover this. Additional sentence:
France 44	66	II.68.		The guidance does not seem relevant or applicable: the transport of hazardous substances may be a normal activity on roads, railways, waterways etc. in the proximity of the NPP. Transport operators are not expected to use the present guide.	X	II.68.The operating organization should establish communication protocols and standards with off-site agencies and organizations when significant movements or activities with asphyxiants, toxic gases, and corrosive and radioactive liquids are planned to take place. Because the potential of the hazard increases during these times, off-site organizations within the site characterization boundaries should notify the operating personnel and emergency managers when off-site activities with asphyxiants, toxic gases, and corrosive and radioactive liquids occur (i.e. transport or movement of these materials). This allows the operating personnel to prepare for an accident that could involve these substances and could impact the site's external hazard mitigation strategies. Regular and less significant movements might be excluded from these communication protocols but also should form part of the plant hazard mitigation strategies		The responsible organization were identified
Germany 63	66	II.68.	**HAZARDOUS SUBSTANCES (**TOXIC, RADIOACTIVE, FLAMMABLE, CORROSIVE AND ASPHYXIANT CHEMICALS AND THEIR MIXTURES IN AIR AND LIQUIDS)	Addition of well-known short title	X			
France 46	66	II.71.	There should be considerations of the need for maintaining personal protective equipment (e.g. breathing apparatus, protection suit) on-site to allow operating personnel and emergency workers to move to places of safety or to perform safety related actions.	Safety related actions outside the plant control room may be needed	X			
France 45	67	II.76.	Additional recommendation The operating organization should consider the design of the installation and its safety features against aircraft crash and their potential interference with other hazards.	Additional general recommendation. This chapter could be interpreted as if there is only emergency organization against aircraft crash. The "hazard management" should also take into account that design of the installation and its safety features take into consideration the risk of an aircraft crash.	X	II.73.While accidental aircraft crash is protected primarily by the design of the structure against the crash load, the operational organization should consider mitigating the effects of the crash if it occurs and minimizing the likelihood of their occurrence. In this regard, it is important to collaborate with external organizations on this hazard. The operating organization should establish and maintain operating procedures and communication protocols with national or regional air traffic control organizations for immediate and/or redundant event notifications, as appropriate.		Agreed. The commented aspect were added at the opening of this sub-section.
Belgium 10	67	II.77.	… alternative mobile equipment for spray water and electrical power supply …	We do not see what kind of "spray water" is envisaged here. To be clarified by rewording?	X	II.77.The operating organization should develop a specific procedure for action and deployment of alternative mobile equipment for firefighting water deployment and electrical power supply that should be available on-site, and on-site emergency response personnel when notified of this hazard. This includes the prompt relocation of equipment and personnel from any potentially affected location to prevent an inadmissible loss of emergency response capability.		Clarified that it is fire fighting water.
France 47	67	II.79.	(N/A. Comment is for II.79 and II.80)	Unless there is some actual feedback from past events, the guidance does not seem applicable. The time between a declared emergency on an aircraft leading to its crash does not seem sufficient to contemplate any evacuation of personnel or implementation of procedure for the plant.			X	Accept that the scenario is a very remote possibility and more likely due to deliberate human action than to accidental causes. Nevertheless, it is not unreasonable for some pre-planning. The current text takes these into account because the same discussion took place in the previous review by review committees. We hope you will understand.
France 48	67	II.81.	Addition of a new footnote II.81. Large solar storms caused by solar flares and electromagnetic pulses can affect the electrical grid, on-site electric equipment and instrumentation and control systems*. *Solar storms have a lower perturbation level than electromagnetic pulses, but a wider area of effects. Solar storms will mainly have effects on long conductors as pipeline and electrical line (and connected transformers) where electromagnetic pulses can have effects on other equipment. The effects and the countermeasures for those two hazards might be different.	Solar storms and electromagnetic pulse are different and it shall be enhanced.	X			

No.	Page	Paragraph	Proposed new text	Reason	Accepted	Accepted, but modified as follows* *Note that there are cases the draft text has modified from text in this column by editorial improvement	Rejected	Reason for modification/rejection
France 49	68	II.84.	The operating organization should perform routine inspections and maintenance on shielded cables for those instrumentation and control systems.	Text should read “shielded cables” or “cable shielding”	X	II.84.The evolution of instrumentation and control in nuclear power plants includes more digital equipment and tends to increase the plant vulnerability to electromagnetic interferences. The operating organization should perform routine inspections and maintenance on cable shielding for those instrumentation and control systems.		Prefer “cable shielding”
UK 30	68	II.85.	The operating organization should consider biological phenomena in the hazard management, as appropriate. Biological phenomena encompass the following three types of biological hazards: Marine or waterborne, e.g. jellyfish, seaweed, fish, mussels. Land-based, e.g. infestation from mice, rats, rabbits, biological debris such as fallen leaves. Airborne, e.g. swarms of insects, flocks of birds. Section should also include: "Biological induced corrosion in supporting structures and pipework, leading to sudden or premature failure in components made from materials thought to be corrosion resistant."	BIC can affect the internal structure of stainless steel and is not easily detected by visual inspection, or NDT.	X	II.86.Biological hazards might include slower action degradation such as bacterial induced corrosion in supporting structures and pipework, leading to sudden or premature failure in components made from materials thought to be corrosion resistant. These however should be addressed via programmes of asset inspection and ageing management - for example the periodic reviews described in section 6 of this guide. The remainder of this discussion relates to the more immediate effects of biological hazards. The cooling water and intake structures should be monitored continuously, to ensure that any unusual accumulation of aquatic organisms is noticed in time and that measures can be taken to avoid clogging of intake structures or unacceptable degradation of cooling water quality. Communication protocols and standards should be established with regional environmental, meteorological, and waterways agencies to identify when biological hazards might be present or expected so the operating personnel can take timely actions to mitigate the hazard.		Change proposed to paragraph II.86 rather than II.85
Indonesia 54	68	II.87.	For waterborne biological hazards, the operating organization should consider: •the use of chemical controls where allowed by environmental regulations; **•Regular mechanical cleaning;** **•Complete drainage and dry-storage**	•Microbiologically Influenced Corrosion refers to corrosion affected by the presence or activity, or both, of microorganisms. •Nuclear power generation affected by MIC in: carbon and stainless steel piping and tanks; copper-nickel, stainless, brass and aluminum bronze cooling water pipes and tubes, especially during construction, hydrotest, and outage periods. •MIC can be prevented through a number of methods: –Regular mechanical cleaning if possible –Chemical treatment with biocides to control the population of bacteria –Complete drainage and dry-storage	X			
Russian Federation 24	69	II.97.	It is suggested to add an additional paragraph as follows: “Operational methodologies for detection and accounting of problematic soils at NPP site at the design stage should be developed. Problematic soils include swelling, collapsing, residual, man-made, biogenic, permafrost, highly soluble and karsting soils and silts, sapropels”.	*(This column was left blank by MS but the reason of the proposal may be the same as the comment No. Russian Federation 10.)*		Reject "problematic soils" as a hazard, but recommend that it is picked up in "Periodic review" aspects.	X	See Russian Federation 10.