DS462

Amendments to the IAEA Safety Requirements:

- GSR Part-1 on Governmental, Legal and Regulatory Framework for Safety
- NS-R-3 on Site Evaluation for Nuclear Installations
- SSR-2/1 on Safety of Nuclear Power plants: Design
- SSR-2/2 on Safety of Nuclear Power plants: Commissioning and Operation
- GSR Part 4 on Safety Assessment for Facilities and Activities

Status
STEP 10: Second internal review

Below the text submitted to the MS for comments, you will find the set of individual comments and then the individual answers

The overall resolution is to be found on the right column, highlighted in yellow

Lessons learned	Current text	Proposal for MS consultation	Proposed resolution of MS comments after NUSSC WG meeting Track changes version, compared to what was submitted to the Member States for comments		
Country X Number of the comment	Proposed text	Rationale	Accepted	Accepted with modification	Rejected and reason
Country Y Number of the comment	Proposed text	Rationale	Accepted	Accepted with modification	Rejected and reason

In some cases, there are proposal for additional amendments not initially proposed by the IAEA. They are highlighted in Blue

Amendments to GSR Part 4

LL	Current text	Proposal for Member States consultation	Proposed resolution of MS comments Accepted	Accepted with modification	Rejected and reason
		IAEA Proposal below on the update of the cross-references	Footnote No.4 to para. 1.6: The list of facilities and activities given here has been compiled from the lists provided in the Fundamental Safety Principles [1] and the Safety Requirements publication on Governmental, Legal and Regulatory Framework for Safety ~~Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety~~ [2].		
Germany **GSR Part 4** **1**	Footnote No.4 to para. 1.6: The list of facilities and activities given here has been compiled from the lists provided in the Fundamental Safety Principles [1] and the Safety Requirements publication on Governmental, Legal and Regulatory Framework for Safety ~~Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety~~ [2].	Correct title of GSR Part 1	Accepted		
ENISS 1	General comment GRS, Part 4 is the top requirements document applicable for all “facilities and activities” in their generic meaning defined by the Glossary. Attempts to complement the text by lessons learned from Fukushima tends to address nuclear power plants issues (using terms like “unit”, plant state”, “severe accident”, etc.), which may not be fully applicable for storage of radiation generators, research, transportation activities, etc. If used in text, than applicability of these terms should be explained (e.g. by the footnote).		Accepted		
Additional modification for consistency	4.20 All safety functions associated with a facility or activity are to be specified and assessed. This includes the safety functions associated with the engineered structures, systems and components, any physical or natural barriers and inherent safety features as applicable, and any human actions necessary to ensure the safety of the facility or activity. This is a key aspect of assessment, and is vital to the assessment of the application of defence in depth (see paras 4.45–4.48). An assessment is undertaken to determine whether the safety functions can be fulfilled for all normal operational modes (including startup and shutdown where appropriate), all anticipated operational occurrences and the accident conditions to be taken into account; these includes design basis accidents and	4.20 All safety functions associated with a facility or activity are to be specified and assessed. This includes the safety functions associated with the engineered structures, systems and components, any physical or natural barriers and inherent safety features as applicable, and any human actions necessary to ensure the safety of the facility or activity. This is a key aspect of assessment, and is vital to the assessment of the application of defence in depth (see paras 4.45–4.48). An assessment is undertaken to determine whether the safety functions can be fulfilled for all normal operational modes (including startup and shutdown where appropriate), all anticipated operational occurrences and the accident conditions to be taken into account*.~~;~~ ~~these includes design basis accidents and beyond design basis accidents (including severe accidents).~~ * Footnote: Safety functions are functions that are necessary to be performed for the facility or activity to prevent or mitigate radiological	4.20 All safety functions associated with a facility or activity are to be specified and assessed. This includes the safety functions associated with the engineered structures, systems and components, any physical or natural barriers and inherent safety features as applicable, and any human actions necessary to ensure the safety of the facility or activity. This is a key aspect of assessment, and is vital to the assessment of the application of defence in depth (see paras 4.45–4.48). An assessment is undertaken to determine whether the safety functions can be fulfilled for all normal operational modes (including start up and shutdown where appropriate), all anticipated operational occurrences and the accident conditions to be taken into account*. ~~* Footnote: Safety functions are functions that are necessary to be performed for the facility or activity to prevent or mitigate radiological consequences of normal operation, anticipated~~		

	beyond design basis accidents (including severe accidents).	consequences of normal operation, anticipated operational occurrences and accident conditions. These functions can include control of reactivity, removal of heat from radioactive material, confinement of radioactive material and shielding, depending on the nature of the facility or activity.	~~operational occurrences and accident conditions. These functions can include control of reactivity, removal of heat from radioactive material, confinement of radioactive material and shielding, depending on the nature of the facility or activity.~~		
Finland **GSR Part 4** **1**	4.20. All safety functions [footnote 8] associated with a facility or activity are to be specified and assessed. This includes the safety functions associated with the engineered structures, systems and components, any physical or natural barriers and inherent safety features as applicable, and any human actions necessary to ensure the safety of the facility or activity. This is a key aspect of assessment, and is vital to the assessment of the application of defence in depth (see paras 4.45–4.48). An assessment is undertaken to determine whether the safety functions can be fulfilled for all normal operational modes (including startup and shutdown where appropriate), all anticipated operational occurrences and the accident conditions to be taken into account ~~[footnote 9]~~	Delete footnote 9, The footnotes 8 and 9 are the same.	Accepted		
Japan **1**	4.20 footnote: Safety functions are functions that are necessary to be performed for the facility or activity to prevent or mitigate radiological and associated chemical consequences of normal operation, anticipated operational occurrences and accident conditions. These functions can include control of reactivity (preventing subcriticality for fuel cycle facilities), removal of heat from radioactive material, confinement of radioactive material and shielding, depending on the nature of the facility or activity.	(1)According to NS-R-5, Events initiated by chemical hazards shall be considered in the design, commissioning and operation of the fuel cycle facility. This means that associated chemical consequences have to be mitigated in addition to the radiological consequences. (2)For nuclear fuel cycle facilities, the safety function to maintain fuel subcritical is as important as the confinement function.			We consider in SSs only radiological consequences initiated by whatever event, including chemical hazards if applicable. Prevent sub-criticality is wrong. Control or reactivity includes the intended meaning
USA 18 (Johnson)	Footnote Bring the footnote into conformance with the IAEA Safety Glossary	The footnote gives a definition of safety function that is different from the Safety Glossary's		?	It was just a repeated footnote. The general consensus can be reached by deleting the repeated footnote
Russia 19	4.20 footnote	This footnote completely repeats a footnote 8 considered standards GSR Part 4 Rev.1. In this connection it is necessary to exclude this footnote and refer to a footnote 8	Accepted		
Canada **1**	4.20 Delete footnote 9 from end of paragraph.	It duplicates footnote 8 earlier in the paragraph.	Accepted		
ENISS 2	4.20 Delete footnote 9	Footnote 9 repeats already existing Footnote 8 defining Safety Functions	Accepted		

50.1	4.31. The external events that could arise for a facility or activity have to be addressed in the safety assessment, and it has to be determined whether an adequate level of protection against their consequences is provided. This could include natural external events, such as extreme weather conditions, and human induced events, such as aircraft crashes, depending on the possible radiation risks associated with the facility or activity. Where applicable, the magnitude of the external events that the facility is required to be able to withstand (sometimes referred to as design basis external events) has to be established for each type of external event on the basis of historical data for the site for natural external events and a survey of the site and the surrounding area for human induced events. Where there is more than one facility or activity at the same location, account has to be taken in the safety assessment of the effect of a single external event, such as an earthquake or a flood, on all of the facilities and activities, and of the potential hazards presented by each facility or activity to the others.	4.31. The external events that could arise for a facility or activity have to be addressed in the safety assessment, and it has to be determined whether an adequate level of protection against their consequences is provided. This could include natural external events, such as extreme weather conditions, and human induced events, such as aircraft crashes, depending on the possible radiation risks associated with the facility or activity. Where applicable, the magnitude of the external events that the facility is required to be able to withstand (sometimes referred to as design basis external events) has to be established for each type of external event on the basis of historical data for the site for natural external events and a survey of the site and the surrounding area for human induced events. ~~Where there is more than one facility or activity at the same location, account has to be taken in the safety assessment of the effect of a single external event, such as an earthquake or a flood, on all of the facilities and activities, and of the potential hazards presented by each facility or activity to the others~~The safety assessment shall demonstrate that the design provides sufficient margins to cope with external hazards of a severity or duration exceeding those considered in the design for ensuring that off-site protection measures limited in time and areas are sufficient to protect the public and the environment.	4.31. The external events that could arise for a facility or activity have to be addressed in the safety assessment, and it has to be determined whether an adequate level of protection against their consequences is provided. This could include natural and human induced external events~~, such as extreme weather conditions, and human induced events, such as aircraft crashes~~, depending on the possible radiation risks associated with the facility or activity. Where applicable, the magnitude of the external events that the facility is required to be able to withstand (sometimes referred to as design basis external events) has to be established for each type of external event on the basis of historical data for the site for natural external events and a survey of the site and the surrounding area for human induced events. ~~The safety assessment shall demonstrate that the design~~ **is adequately conservative** ~~provides sufficient margins to~~ **accommodate natural and human induced** ~~external~~ **events.** ~~hazards of a severity or duration exceeding those considered in the design for ensuring that off-site protecti~~**ve** ~~measures limited in time and areas are sufficient to protect the public and the environment~~. Where appropriate, the safety assessment shall demonstrate that the design is adequately conservative, so that margins are available to withstand external hazards exceeding those derived from the site evaluation to ensure that off-site protection measures limited in time and areas are sufficient to protect the public and the environment.			
USA 17 (Johnson)	4.31 Modify last sentence: "The safety assessment shall demonstrate that the design provides sufficient margins to cope with external hazards ~~of a severity or duration exceeding those considered in the design for ensuring that off-site protection measures limited in time and areas are sufficient to protect the public and the environment~~ for both design basis and design extension conditions, as described in SSR-2/1."	Revise. The added material seems to convolve two ideas in an overly complex way. As written, it seems to say that the design must ensure sufficiency of off-site measures. The design cannot do this. I think what is intended is something to do with limiting or delaying releases so that offsite measures can be taken.		GRS Part 4 not just for NPPs. Reference to SSR 2/1, DEC,… not appropriate	
Finland **GSR Part 4** **2**	4.31 The external events that could arise for a facility or activity have to be addressed in the safety assessment, and it has to be determined whether an adequate level of protection against their consequences is provided. This could include natural external events, such as extreme weather conditions, and human induced events, such as aircraft crashes, depending on the possible radiation risks associated with the facility or activity. ~~Where applicable, the magnitude of the external events~~	It should be clarified if the safety assessment includes also design extension conditions or only the design basis accident conditions. see also SSR-2/1 req. xx		Last part accepted with modification	The safety assessment is for everything. No need to make distinctions and get in to trouble with terms that are not general for all facilities.

	~~that the facility is required to be able to withstand (sometimes referred to as design basis external events) has to be established for each type of external event on the basis of historical data for the site for natural external events and a survey of the site and the surrounding area for human induced events.~~ The safety assessment shall demonstrate that the design provides sufficient margins to cope with external hazards of a severity or duration exceeding those considered in the design for ensuring that off-site protection measures limited in time and areas are sufficient to protect the public and the environment.				
Canada 2	4.31 "The safety assessment shall demonstrate that the design provides sufficient margins to cope with external hazards of a severity or duration exceeding ~~those considered in the design~~ design basis accidents for ensuring that off-site protection measures limited in time and areas are sufficient to protect the public and the environment."	Certain events more severe than DBA are considered in the design (Design Extension Conditions in SSR-2/1). The draft wording requires a margin beyond DEC. It should be a margin beyond DBA. Moreover, if left unchanged, the reasoning is circular. As worded, the design must cope with conditions more severe than those for which it was designed. So it must be designed for these more severe conditions. But now, it must be designed for a margin beyond these new conditions. And so on…			The change is about margins for external hazards. An external hazard is not an accident. It is a load. The design basis of each SSC includes the magnitude of hazards it is designed for.
France 0	4.31 The safety assessment shall demonstrate that the design provides ~~sufficient~~ adequate margins to ~~cope~~ accommodate ~~with~~ external hazards of a severity or duration exceeding those considered in the design for ensuring that off-site protection measures limited in time and areas are sufficient to protect the public and the environment.	Consistency with SSR-2/1 (5.21)		Accepted in a way consistent with other comments.	
France 3	4.31 The external events that could arise for a facility or activity have to be addressed in the safety assessment, and it has to be determined whether an adequate level of protection against their consequences is provided. This could include natural external events, such as extreme weather conditions, and human induced events, such as aircraft crashes, depending on the possible radiation risks associated with the facility or activity. Where applicable, the magnitude of the external events that the facility is required to be able to withstand (sometimes referred to as design basis external events) has to be established for each type of external event on the basis of historical data for the site for natural external events and a survey of the site and the surrounding area for human induced events. The safety assessment shall demonstrate that the design provides	The last paragraph, which is the proposed addition to current requirement is very ambitious as it does not have an upper limit on the severity or duration of the hazard…		Accepted with modification	

	sufficient margins to cope with external hazards of a severity or duration exceeding those considered in the design for ensuring that off-site protection measures limited in time and areas are sufficient to protect the public and the environment.				
France 4	4.31 The safety assessment shall demonstrate that the design provides sufficient margins to cope with external hazards of a severity or duration remaining credible but exceeding those considered in the design for avoiding radioactive releases as far as practicable and, if such release were to occur, for ensuring that off-site protection measures limited in time and areas are sufficient to protect the public and the environment and that there is sufficient time to implement them.	Large release prevention is a minimum goal. Moreover, early releases should also be prevented. There also need some kind of limit on the severity of beyond design basis hazard considered.		Accepted in a way consistent with other comments.	
ENISS 2	4.31 … The safety assessment shall demonstrate that the design provides ~~sufficient~~ adequate margins to ~~cope~~ accommodate ~~with~~ external hazards of a severity or duration moderately exceeding those considered in the design for ensuring that off-site protection measures limited in time and areas are sufficient to protect the public and the environment.	Consistency with SSR-2/1 (5.21)		Accepted in a way consistent with other comments.	
WNA 1	In line with the principles of a graded approach, the safety assessment shall demonstrate that the design provides ~~sufficient~~ adequate margins to ~~cope~~ accommodate ~~with~~ external hazards of a severity or duration exceeding those considered in the design for ensuring that off-site ~~protection~~ protective measures limited in time and areas are sufficient to protect the public and the environment.	Consistency with SSR-2/1 (5.21) Editorial, The last sentence as it stands now is not grammatically correct.		"In line with… "not adequate Accepted in a way consistent with other comments.	
50.1 50.2	**Lessons initially linked to :** **Requirement 2 and Requirement 14 but after discussions at the NUSSC WG and the NUSSC decided to be brought after under Requirement 10**	New paragraphs after 4.36 4.36.a For sites with multiple facilities or activities, account shall be taken in the safety assessment of the effect of external hazards on all facilities and activities, including the possibility of concurrent events in different facilities and activities, and of the potential hazards presented by each facility or activity to the others. 4.36.b A systematic assessment process shall be used to review multiple facility sites for the potential for common cause failures due to the possibility of using the same safety systems for more than one unit in accident conditions.	New paragraphs after 4.36 4.36.a For sites with multiple facilities or activities, account shall be taken in the safety assessment of the effect of external hazards on all facilities and activities, including the possibility of concurrent events in different facilities and activities, and of the potential hazards presented by each facility or activity to the others. 4~~.36.b A systematic assessment process shall be used to review multiple facility sites for the potential for common cause failures due to the possibility of using the same safety systems for more than one unit in accident conditions.~~		

		4.36.c If facilities share resources (whether human or material) in accident conditions the safety assessment shall demonstrate that the required safety functions can nevertheless be fulfilled at each facility during such conditions.	4.36.**b**~~c~~ If facilities share resources (whether human or material) in accident conditions the safety assessment shall demonstrate that the required safety functions can nevertheless be fulfilled at each facility during such conditions.		
Germany **GSR Part 1** **2**	4.36b A systematic assessment process shall be used to review existing multiple facility sites for the potential for common cause failures due to the possibility of using the same safety systems for more than one unit in accident conditions.	This requirement is in contradiction to Requirement 33 of SSR 2/1 where it is required that "E*ach unit shall have its own systems important to safety to control and mitigate the anticipated operational occurrences and accidents considered for the design*". Consequently, sharing of safety systems is not permitted. Having Requirement 33 in mind, the new para.4.36.b should be restricted to existing facilities.			SSs are not developed for existing facilities. GRS part 4 is not only for NPPs 4.36b deleted as by other comment (ENISS 4)
France 1	4.36 b ~~A systematic assessment process shall be used to review multiple facility sites for the potential for common cause failures due to the possibility of using the same safety systems for more than one unit in accident conditions.~~ For a multiple facility site, if, in accident conditions, inter connecting systems among the facilities is considered to facilitate the accident management of one facility by giving the possibility to restore a safety function, a systematic assessment process shall be used to review potential negative impacts, for example due to common cause failures.	To be more consistent with proposed updated requirement in SSR-2/1, recognizing that GSR part 4 has a broader scope.		Accepted with modification	
France 2	4.36 c: Locate 4.36c before 4.36b	More logical order : 4.36c is the general issue (sharing of human resources or equipment) and 4.36b a specific case (interconnecting systems)	Accepted		
ENISS 4	4.36 b ~~A systematic assessment process shall be used to review multiple facility sites for the potential for common cause failures due to the possibility of using the same safety systems for more than one unit in accident conditions.~~	It is unclear, what is exactly meant with this requirement, as 1. Shared safety systems are not allowed between units according to SSR 2/1 Req. 33 2. The common cause potential of identical safety systems is dealt with in the safety assessment of one specific plant – to extend that analysis to all plants of one site does not give added value, because care is taken on plant level. 3. Shared resources e.g. for severe accident management is included in 4.36c We therefore suggest deleting 4.36b.	Accepted Argument 1 refers to NPP		
	4.38 The safety of facilities and activities will depend on actions carried out by the operating personnel, and all such human interactions with the facility or activity are to be assessed.	No initial IAEA proposal	4.38 Whenever the safety of facilities and activities depends on human actions, including during accidents, these human interactions with the facility or activity shall be assessed.		
France 4bis and **ENISS 5**	4.38 The safety of facilities and activities will depend on actions carried out by the ~~operating~~ on site personnel, and all such human interactions with the facility or activity are to be assessed.	Current strategies do not rely on operating personnel only (also fire brigades, guards, fast response & rescue teams, emergency response organization, etc.)	.		

				See overarching requirement. The assessment is mostly focused in HFE (man machine interface, procedures and other human reliability issues (e.g. procedures)) as for instance in NUREG 071, which is the basis of Chapter 18. The individuals are mostly the plant personnel. It is true that in accident management other people can intervene, but also some of the people mentioned are not involved in the plant safety (rescue teams) or might influence actions and not be at the site (emergency response organization).	
5.1 22.1	4.48 It has to be determined in the safety assessment whether there are adequate safety margins in the design and operation of the facility, or in the conduct of the activity in normal operation and in anticipated operational occurrences or accident conditions, such that there is a wide margin to failure of any structures, systems and components for any of the anticipated operational occurrences or any possible accident conditions. Safety margins are typically specified in codes and standards as well as by the regulatory body. It has to be determined in the safety assessment whether acceptance criteria for each aspect of the safety analysis are such that an adequate safety margin is ensured.	4.48 a The safety assessment shall include in-depth evaluation to identify potential cliff-edge effects in the facility response to postulated initiating events. For each cliff-edge effect identified, the safety assessment shall confirm that there are adequate margins to avoid the cliff-edge effect or a sufficient grace period is available for taking mitigatory actions.		4.48 a ~~The safety assessment shall include in-depth evaluation to identify potential cliff-edge effects in the facility response to postulated initiating events. For each cliff-edge effect identified, the safety assessment shall confirm that there are adequate margins to **avoid** the cliff-edge effect~~**,** ~~or a sufficient grace period is available for taking mitigating actions.~~ 4.48a Where practicable, the safety assessment shall confirm that there are adequate margins to avoid cliff-edge effects having unacceptable consequences	
USA 1 Case (RES)	4.48a Change “identify” to “address” in the first sentence. Delete “identified” in the second sentence	The term “identify” with respect to cliff edge effects is overly prescriptive. In the design process, cliff edge effects are addressed, but they are not routinely identified and listed in the safety assessment.		While they might not be routinely listed, how can cliff edge effects be addressed without being identified? However, we eliminate the in depth evaluation, which is case specific. In the confirmation of the margins how much detailed is needed should be decided.	
Finland	4.48 a	Please clarify, is this requirement related to design basis accident conditions.		As the document is generic, the term PIEs is the most	

GSR Part 4 **3**	The safety assessment shall include in-depth evaluation to identify potential cliff-edge effects in the facility response to postulated initiating events. For each cliff-edge effect identified, the safety assessment shall confirm that there are adequate margins to ~~avoid~~ the cliff-edge effect or a sufficient grace period is available for taking mitigatory actions.	delete: avoid change: mitigative		adequate	
Japan	4.48 a The safety assessment shall include in-depth evaluation to identify potential cliff-edge effects in the facility response to postulated initiating events. For each cliff-edge effect identified, the safety assessment shall confirm that there are adequate margins to avoid the cliff-edge effects [n)] or a sufficient grace period is available for taking mitigatory actions. [n] Regarding cliff-edge effects for fuel cycle facilities, refer the IAEA safety report "******".	Clarification for the definition of the cliff-edge effects in fuel cycle facilities as a footnote refer to same IAEA safety reports.			Cliff edge effect is in the glossary and in SSR 2/1 for NPPs. If the concept cannot be extrapolated to fuel cycle facilities, then a foot providing the concept would be needed. Referring to an IAEA Safety report is not adequate
France 5	4.48 a The safety assessment shall include in-depth evaluation to identify potential cliff-edge effects in the facility response to postulated initiating events. For each cliff-edge effect identified, the safety assessment shall confirm that there are adequate margins to ~~avoid~~ the cliff-edge effect or a sufficient grace period is available for taking mitigatory actions.	Cliff edge effects could not be totally avoided		Accepted with modification	
ENISS 6 **WNA 2**	4.48 a ~~The safety assessment shall include in depth evaluation to identify potential cliff edge effects in the facility response to postulated initiating events. For each cliff edge effect identified, the safety assessment shall confirm that there are adequate margins to avoid the cliff edge effect or a sufficient grace period is available for taking mitigatory actions.~~	This sentence will induce additional sensitivity studies in all safety analysis. This seems excessive as 4.48 already requires adequate margins in response to normal operation, AOOs and accident conditions. Furthermore the new requirement creates confusion. PIE is the term used for design basis events, whereas cliff edge effects must be considered out of scope of design (see SSR-2/1, § 4.11, (b)).		It has been reworded in line with other comments	
Additional modification for consistency	4.50 The consequences arising from all normal operational conditions (including startup and shutdown, where appropriate) and the frequencies and consequences associated with all anticipated operational occurrences and accident conditions have to be addressed in the safety analysis. This includes accidents that have been taken into account in the design (referred to as design basis accidents) as well as beyond design basis accidents (including severe	4.50 The consequences arising from all normal operational conditions (including startup and shutdown, where appropriate) and the frequencies and consequences associated with all anticipated operational occurrences and accident conditions (including severe accidents) have to be addressed in the safety analysis. ~~This includes accidents that have been taken into account in the design (referred to as design basis accidents) as well as beyond design basis accidents (including severe accidents) for facilities and activities where the radiation risks are high.~~ The analysis has to be	4.50 The consequences arising from all normal operational conditions (including start up and shutdown, where appropriate) and the frequencies and consequences associated with all anticipated operational occurrences and accident conditions ~~(including severe accidents)~~ have to be addressed in the safety analysis. The analysis has to be performed to a scope and level of detail that correspond to the magnitude of the radiation risk associated with the facility or activity, the frequency of the events included in the analysis, the complexity of the facility or activity, and the uncertainties		

	accidents) for facilities and activities where the radiation risks are high. The analysis has to be performed to a scope and level of detail that correspond to the magnitude of the radiation risk associated with the facility or activity, the frequency of the events included in the analysis, the complexity of the facility or activity, and the uncertainties inherent in the processes that are included in the analysis.	performed to a scope and level of detail that correspond to the magnitude of the radiation risk associated with the facility or activity, the frequency of the events included in the analysis, the complexity of the facility or activity, and the uncertainties inherent in the processes that are included in the analysis.	inherent in the processes that are included in the analysis.		
ENISS 7	4.50 The consequences arising from all normal operational conditions (including startup and shutdown, where appropriate) and the frequencies and consequences associated with all anticipated operational occurrences and accident conditions ~~(including severe accidents)~~ have to be addressed in the safety analysis. …	Normal operation, anticipated operational occurrences and accident conditions are consistently used throughout this document. Glossary defines that severe accident are included in accident conditions. If severe accident analyses (with specific criteria - to be defined - different for existing plant and new builds) have to be included in safety reports of NPPs, then GS-G-4.1 is a correct place to require.	Agreed		
22.1	4.54 The aim of the deterministic approach is to specify and apply a set of conservative deterministic rules and requirements for the design and operation of facilities or for the planning and conduct of activities. When these rules and requirements are met, they are expected to provide a high degree of confidence that the level of radiation risks to workers and members of the public arising from the facility or activity will be acceptably low. This conservative approach provides a way of compensating for uncertainties in the performance of equipment and the performance of personnel, by providing a large safety margin.	4.54 The aim of the deterministic approach is to specify and apply a set of conservative deterministic rules and requirements for the design and operation of facilities or for the planning and conduct of activities. When these rules and requirements are met, they are expected to provide a high degree of confidence that the level of radiation risks to workers and members of the public arising from the facility or activity will be acceptably low. This conservative approach provides a way of compensating for uncertainties in the performance of equipment and the performance of personnel, by providing a large safety margin. It shall be demonstrated that this margin is sufficient to avoid cliff edge effects.	4.54 The aim of the deterministic approach is to specify and apply a set of ~~conservative~~ deterministic rules and requirements for the design and operation of facilities or for the planning and conduct of activities. When these rules and requirements are met, they are expected to provide a high degree of confidence that the level of radiation risks to workers and members of the public arising from the facility or activity will be acceptably low. ~~This c~~Conservatism~~ve~~ in the deterministic approach compensates~~provides a way of compensating~~ for uncertainties such as in the performance of equipment and ~~the performance of~~ personnel, by providing a ~~large~~ safety margin. ~~It shall be demonstrated that this margin is sufficient to avoid cliff edge effects.~~		
Canada 3	4.54 “The aim of the deterministic approach is to specify and apply a set of ~~conservative~~ deterministic rules and requirements for the design and operation of facilities or for the planning and conduct of activities. For anticipated operational occurrences and design basis accidents, the rules and requirements are conservative; for accidents beyond the design basis, best estimate assumptions and a lower level of conservatism is appropriate. When these rules and requirements are met, they are expected to provide ~~a high~~ an appropriate degree of confidence that the level of radiation risks to workers and members of the public arising from the facility or activity will be acceptably low. This conservative approach to analysis of design basis accidents provides a way of compensating for uncertainties in the performance of equipment and the performance of personnel, by providing a large safety margin. It shall be demonstrated that this margin is sufficient to avoid cliff edge effects.”	The extension of analysis scope to include severe accidents (para 4.50) has an unintended impact on para 4.54. Unless changed, it will require conservative analysis of accidents less frequent than DBA. This is inconsistent with SSR-2/1 for NPPs. DECs and are defined in SSR-2/1 as “*Accident conditions that are not considered for design basis accidents, but that are considered in the design process of the facility* ***in accordance with best estimate methodology****, and for which releases of radioactive material are kept within acceptable limits….*”		Severe accident eliminated in 4.50	
ENISS 8	4.54 The aim of the deterministic approach is to specify and apply a set of conservative deterministic rules and	Editorial remark: in the full text Version provided for information the last sentence of 4.54 was added in addition to the changes proposed in the	Accepted		

	requirements for the design and operation of facilities or for the planning and conduct of activities. When these rules and requirements are met, they are expected to provide a high degree of confidence that the level of radiation risks to workers and members of the public arising from the facility or activity will be acceptably low. This conservative approach provides a way of compensating for uncertainties in the performance of equipment and the performance of personnel, by providing a large safety margin. ~~It shall be demonstrated that this margin is sufficient to avoid cliff edge effects.~~ Alternative Proposal: It shall be demonstrated that ~~this margin is sufficient to avoid cliff edge effects~~ a sufficient grace period is available for taking mitigatory actions.	document for MS-Comments – this addition needs to be deleted in a final version of the document. If not deleted, see proposal. Cliff edge cannot be avoided in far beyond design bases conditions, however must be avoided in design conditions (including those extended). This is because any conservative assumption can be overstated by even more conservative assumption (the fall down of the meteorite?).			
WNA 3	4.54 … performance of personnel, by providing a large safety margin. ~~It shall be demonstrated that this margin is sufficient to avoid cliff edge effects.~~It shall be demonstrated that sufficient grace period is available	Editorial remark: in the full text Version provided for information the last sentence of 4.54 was added in addition to the changes proposed in the document for MS-Comments – this addition needs to be deleted in a final version of the document. Alternative: See new sentence	Accepted partially (deletion)		
19.1	5.6. The results of the safety assessment have to be used to specify the procedures to be put in place for all operational activities significant to safety and for responding to anticipated operational occurrences and to accidents. The safety assessment is also to be used as an input into planning for on-site and off-site emergency response and accident management.	5.6. The results of the safety assessment have to be used to specify the procedures to be put in place for all operational activities significant to safety and for responding to anticipated operational occurrences and to accident~~s~~ conditions. The safety assessment is also to be used as an input into planning for on-site and off-site emergency response and accident management.	5.6. The results of the safety assessment shall~~have to~~ be used to specify the procedures to be put in place for all operational activities significant to safety and for responding to anticipated operational occurrences and to accident conditions. The results of the safety assessment shall~~is also to~~ be used as an input into planning for on-site and off-site emergency response* and accident management. * Foot note: See Reference [7] (New reference to be introduced to the revision of GS-R-2 (GSR Part 7))		
Japan **3**	5.6 The results of the safety assessment have to be used to specify the procedures to be put in place for all operational activities significant to safety and for responding to anticipated operational occurrences and to accident conditions. ~~The safety assessment is~~ These are also to be used as an input into planning for on-site and off-site emergency response and accident management.	Editorial. In our understanding, this subject is also “the results of safety assessment”.		With the change proposed “these” would be understood as the anticipated operational occurrences and accident conditions For consistency with the Requirements language the term shall is introduced	