COMMENTS BY REVIEWER Reviewer: Marcus Grzechnik Country/Organization: ARPANSA, Australia Date: 9/10/18				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	General	The first three guides appropriately reference GSR Part 7, however consideration should be given to referencing GSR Part 7 in the remaining guides. This is particularly relevant where emergency plans are required (such as in NS-G-2.5 revision.				X	N/A for NSG-2.2, out of the scope (see para 1.4)

COMMENTS BY REVIEWER Reviewer: Mikko Lemmetty, Stéphanie NGUYEN, Laurence Oury Country/Organization: ENISS Date: 2018-09-26				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	NS-G-2.2, para 4.1	The safety limits should be established by means of a conservative approach to ensure that all the uncertainties of safety analyses are taken into account. This implies that exceeding a single safety limit does not always lead to the unacceptable consequences mentioned earlier. Nevertheless, if any safety limit is exceeded, the reactor should be shut down or ~~and~~ normal power operation restored	It happens that safety limit is exceeded (example on temperature or pressure) the unit is not all the time shut down, it is asked to restore as quick as possible normal power operations within limits	Ok Text modified as:	New sentence added: Exception from the rule to shut down the reactor after a safety limit have been exceeded should be included in the OLC and justified in the safety analysis.		

COMMENTS BY REVIEWER Reviewer: Mikko Lemmetty, Stéphanie NGUYEN, Laurence Oury Country/Organization: ENISS Date: 2018-09-26				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		only after appropriate evaluation has been performed and approval for restarting has been given in accordance with established plant procedures.					
2.	NS-G-2.2, para 8.1.A	"to avoid ~~any~~ negative impact on the sufficient reliability"	Avoiding "any" impact is practically impossible. Avoiding "significant" impact or "avoiding negative impacts" is possible. On the other hand, negative impacts on reliability may be accepted as long as the level of reliability is sufficient.	Ok Text modified	The word “any” is removed in the sentence.		
3.	NS-G-2.2, para 8.2.A	"require ~~signing~~ confirmation of steps by marking or signing"	With systems of electronic instructions, "signing" is not practical, but "confirmation" is.	Ok Text modified	New text: The use of step-by-step procedures should require confirmation of the steps after they have been carried out by the operator. The confirmation could be made		

COMMENTS BY REVIEWER Reviewer: Mikko Lemmetty, Stéphanie NGUYEN, Laurence Oury Country/Organization: ENISS Date: 2018-09-26				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
					by signing or marking.		
4.	NS-G-2.2, para 8.3	Operator aids including ~~sketches, handwritten notes~~, curves and graphs, instructions, ~~copies of procedures, prints, drawings~~, information tags and other information sources that are used routinely by operators to assist them in performing their assigned duties ~~should~~ can be ~~controlled by the operations department~~ modified only by the operating organisation	Administrative control for all kind of aids without any kind of graded approach causes an unacceptably high workload and may lead to focusing on administratively easy but non-safety-related issues. Having an administrative control of drawings, instructions, tags curves graphs is naturally normal. But the same work for sketches, handwritten notes, copies of instructions that are done by the individual operator to help them in their work means in practice that the operator can only write down things if that is required by some procedure, which is a very severe limitation on			X	Paragraph 8.3 is in line with paragraphs 6.15 and 6.16 in the NS-G-2.14 NS-G-2.14 deals with the operations department in paragraphs 2.1 to 2.5. SSR 2/2 also have requirements on operations department in paragraph 8.10

COMMENTS BY REVIEWER Reviewer: Mikko Lemmetty, Stéphanie NGUYEN, Laurence Oury Country/Organization: ENISS Date: 2018-09-26				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			the operator's freedom of action. The organizational structures may vary. The NS-G-2.4 nor the safety glossary do not define an entity called "operations department", but the operating organization is always responsible for these documents.				
5.	NS-G-2.2, para 8.11 p25-26/55	8.11 Symptom based EOPs can resolve some of the limitations of the event based approach by formally defining and prioritizing the major critical safety functions. In symptom based procedures, the decisions for measures to respond to events should be specified with respect to the symptoms and the state of systems of the plant (such as the values of safety parameters and critical safety functions). This allows the opera- tor to maintain optimal operating characteristics without	There is a dedicated section for severe accident. This sentence found in the EOP section should be removed or moved to the part on severe accident.	Ok Text modified	Sentence removed.		

COMMENTS BY REVIEWER Reviewer: Mikko Lemmetty, Stéphanie NGUYEN, Laurence Oury Country/Organization: ENISS Date: 2018-09-26				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		the need to be concerned with the continuing accident scenario. ~~The method for monitoring plant parameters used in the symptom-based approach is in accordance with the needs of the plant staff in severe accident conditions~~.					
6.	NS-G-2.2, para 8.14 p26/55	8.14 Explanatory text should be avoided in EOPs, which should be limited to instructions for the operator to carry out an action or to verify the plant state. EOPs should contain supplementary background information to aid operators further in taking proper emergency actions, but this information should be separated from the main procedural actions. The instructions should include actions, where appropriate, to initiate the procedure for determining the emergency class of the accident conditions and beginning the corresponding emergency response actions. The instructions for these actions should be repeated whenever	SAMG should be dealt with in SAMG part only (not in EOPs). In addition, the relation with emergency class cannot be directly made in SAMG.	Ok Text modified	Words are deleted.		

COMMENTS BY REVIEWER Reviewer: Mikko Lemmetty, Stéphanie NGUYEN, Laurence Oury Country/Organization: ENISS Date: 2018-09-26				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		execution of an EOP ~~or the SAMGs~~ indicates a change in the severity of the event					
7.	NS-G-2.2, para 8.15 p26-27/55	8.15 Severe accident management guidelines (SAMGs) are necessary to cope with design extension conditions with severe fuel damage ~~postulated emergencies~~. ~~should be identified by a~~ S~~s~~ystematic analysis of the plant's vulnerabilities to such accidents, and ~~by the~~ development of strategies to deal with these vulnerabilities should be performed.	"Postulated emergencies" is not a terminology usually used in relation with severe accident: either "design extension conditions with severe fuel damage" or simply "severe accidents" should be used. Severe fuel damage is better than core melting as it includes Spent Fuel Pool fuel damage.	Ok Partly Text modified as:	The words "postulated emergencies" are changed to "severe accidents", terminology defined in the IAEA glossary. Besides that is the text kept as it is. The proposed change does not change the meaning, it's just twisting the words in another way.		
8.	NS-G-2.2, para 8.16	The operating personnel responsible for executing of the SAMG is normally within the technical support center (or equivalent) and the main control room teams. Technical center at corporate,	For licensees which have multiple sites, there is usually both an on-site and central technical support center on site receive advice and	Ok Text modified	"at the site" is added in the first sentence. And a new is added: Staff at a technical center		

COMMENTS BY REVIEWER Reviewer: Mikko Lemmetty, Stéphanie NGUYEN, Laurence Oury Country/Organization: ENISS Date: 2018-09-26				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		national or regional level can also provide to support and guidance to SAMG to the concern unit.	guidance from technical center at corporate level (case for EDF). Such arrangements may also be national or regional.		at corporate, regional or national level can also be the users of SAMGs in support to the concerned site.		
9.	NS-G-2.2, para I.11	Limits and conditions on the boron concentration, neutron flux monitoring in the range of the source, emergency boron systems and isolation of un-borated water sources and should be stated.	The wording should be changed not to make emergency			X	The proposed change of the text does not make sense. The existing text does.
10.	NS-G-2.2., para8.16 p27/55	8.16 Plant specific details should be taken into account in the identification and selection of the most suitable actions to cope with design extension conditions with severe fuel damage ~~postulated emergencies~~. The SAMGs should include the utilization of all possible means, safety related or conventional, permanent or non-permanent, in the plant or from neighbouring units or external~~, with the aim of preventing the release of radioactive material to the~~	See previous comment on terminology (disposition 8.15). The objective of SAMGs are well defined (see revised NS-G-2.15 (DS483)): either all objectives are indicated from revised NS-G-2.15 or none of them.	Ok Text modified as:	To be in line with the glossary the text is changed to: Plant specific details should be taken into account in the identification and selection of the most suitable actions to cope with severe accidents.		

COMMENTS BY REVIEWER Reviewer: Mikko Lemmetty, Stéphanie NGUYEN, Laurence Oury Country/Organization: ENISS Date: 2018-09-26				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		~~environment~~..					
11.	NS-G-2.2., para 8.16	On pages 26 and 27 there are two paragraphs numbered 8.16. All the following numbers are wrong from p27		Agree	Complete check on this aspect before publication		
12.	NS-G-2.2, para 8.17 p27/55	To ensure the effective use of SAMGs, it should be carefully interfaced with the existing EOPs ~~to provide continuity~~ and to avoid any omissions ~~or contradictions~~.	SAMGs can contain instructions contradictory with the EOPs used in previous phases of the accident: specific challenges in severe accident might require these contradictions. For example, in case of hydrogen risk, it may be requested not to use containments sprays. "Continuity" should not be required. In some severe accident management strategies, transition to severe accident management represents a clear, non-reversible change of operating domain. The SAMGs can be based on	Ok Text modified			

COMMENTS BY REVIEWER Reviewer: Mikko Lemmetty, Stéphanie NGUYEN, Laurence Oury Country/Organization: ENISS Date: 2018-09-26				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			the idea that previous EOPs may have been misapplied or disregarded, so it may be self-standing, not relying on continuity from EOPs.				
13.	NS-G-2.2, para 8.18.A	~~8.18.A A transition point from the EOPs to the SAMGs should be set with careful consideration of timing and magnitude of subsequent challenges to fission product barriers. Specific and measurable parameter values should be defined for the transition to the use of SAMGs. When the transition point is specified on the basis of conditional criteria (i.e. if certain planned actions in the EOPs are unsuccessful), the time necessary to confirm that the transition point has been reached should be taken into account.~~	This disposition is copied from revised NS-G-2.15 (DS483 - 3.55 of Step 8). Reference should be made to revised NS-G-2.15 and content should not be copied.	Ok Text modified as:	8.18 A is deleted. In 8.17 the following text is added: For guidance about the interfacing between EOPs and SAMGs and the transition from EOPs to the SAMGs, see Ref. Severe Accident Management Programme for Nuclear Power Plants, Safety Standards Series No. NS-G-2.15, Vienna (2009) [11])		

COMMENTS BY REVIEWER Reviewer: Mikko Lemmetty, Stéphanie NGUYEN, Laurence Oury Country/Organization: ENISS Date: 2018-09-26				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
14.	NS-G-2.2, para 8.18.B P27/55	8.18.B SAMGs should cover spent fuel, low power and shutdown modes and should be suitable to manage design extension conditions with severe fuel damage ~~postulated emergencies~~ that simultaneously affect the reactor and spent fuel.	See previous comment on terminology (disposition 8.15).	Ok Text modified as:	The term "severe accidents" is used in order to be in line with the IAEA glossary.		
15.	NS-G-2.2, para 8.18.E p27-28/55	8.18.E The limits and conditions for ~~means of~~ making interconnections between units should be addressed under ~~a~~ severe accident conditions. The SAMGs ~~guidelines~~ should consider the use of any available and inter-connectable means between units during ~~a severe accident and/or a~~ design extension condition. More information can be found in Ref. Severe Accident Management Programmes for Nuclear Power Plants, IAEA Safety Standards Series No. Revised NS-G-2.15 [11].	In this Safety Guide, focus should be set on limits and conditions. SAMGs is better than guidelines. Revised NS-G-2.15 should be referenced, when published	Ok Text modified as:	The means of making interconnections between units should be addressed in the SAMGs. The SAMGs should consider Reference to NS-G-2.15 is made.		
16.	NS-G-2.2, para 9.6	(f) The use of EOPs for dealing with anticipated operational occurrences and accident conditions including DBA and DEC without severe fuel damage ~~degradation~~, and the use of SAMGs for design extension conditions with severe fuel damage	See previous comment on terminology (disposition 8.15). Consistency between the terminologies.	Ok Partly Text modified as:	New text: (f) The use of EOPs for dealing with accident conditions, including DBA		

COMMENTS BY REVIEWER Reviewer: Mikko Lemmetty, Stéphanie NGUYEN, Laurence Oury Country/Organization: ENISS Date: 2018-09-26				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		~~postulated emergencies~~.			and DEC without significant core degradation, and the use of SAMGs for management of severe accidents (beyond design basis accidents)		
17.	NS-G-2.2, reference [11] p45/55	INTERNATIONAL ATOMIC ENERGY AGENCY, Severe Accident Management Programmes for Nuclear Power Plants, IAEA Safety Standards Series No. NS-G-2.15, IAEA, Vienna (2009). Under revision	This document is also under revision (DS483).	Ok Text modified			

COMMENTS BY REVIEWER Reviewer: M-L Järvinen Country/Organization: STUK Date: 9th October 2018				RESOLUTION			
1.	General	paragraphs 8.7, 8.15, 8.16A, 8.16, 8,17, 8.18A, 8.18B, 8.18E should be rewritten in line with SSR-2/1 and SSR-2/2 requirements.	Please check and modify all of the paragraphs concerning accident management and especially design extension conditions.	Ok			All relevant paragraphs have been checked in the work of resolve specific comments from USA, UK,

			SSR-2/1 requirements should be considered and the design for design extension conditions without core melt and with core melt. SSR-2/1(rev.1) Requirement 20: "…These design extension conditions shall be used to identify the additional accident scenarios to be addressed in the design and to plan practicable provisions for the prevention of such accidents or mitigation of their consequences." SSR-2/1 5.28: "The design extension conditions shall be used to define the design specifications for safety features and for the design of all other items important to safety that are necessary for preventing such conditions from arising, or, if they do arise, for controlling them and mitigating their			X	France, Japan, Germany and ENISS. Although the requirements in SSR 2/1 is very well worded it would be wrong to make reference to it. The main reference for the NS-G-2.2 guide is SSR 2/2 which have specific requirements for OLC.s and OPs. Guidance for the terminology used has been the IAEA glossary 2007.

			consequences.”				
2.	8.7		This specifies that EOP is are preventive mode of accident management. Please check the consistency with SSR-2/1 para. 2.14			X	2.14 in SSR 2/1 deals with certain aspects of the implementation of DiD and has no connection to the use of EOPs.
3.	8.2	SEVERE ACCIDENT MANAGEMENT PROCEDURES AND GUIDELINES	Please add: procedures and; if there are severe accident management systems installed there are also related procedures.	Ok Text modified	Paragraph 8.2 changed as follows: 8.2. All activities important to safety should be carried out in accordance with procedures to ensure that the plant is operated within the OLCs and should provide instructions for the safe conduct of all modes of normal operation, such as starting up, power production, shutting down, shutdown, load changes, process monitoring and		Instead of mixing SAMGs and procedures is paragraph 8.2 broaden to also include maneuvering of systems, equipment and components for all plant states, also for beyond design basis accidents.

					fuel handling. Procedures should provide instructions on how to maneuver systems, equipment or components in all plant state including systems, equipment or components used in beyond design basis accidents.		
4.	8.15	Severe accident management procedures or guidelines (SAMGs) necessary to cope with postulated ~~emergencies~~ design extension conditions - with core melting (severe accidents) should be identified by a systematic analysis of the design extension conditions and the plant's vulnerabilities to such accidents, and by the development of strategies to deal with these vulnerabilities.	Please add procedures. The postulated emergencies design extension conditions is not defined. This should be in line with SSR-2/1 requirements.			X	See the resolution above.
5.	8.16 A	SAMGs should be developed from the accident management strategies and measures to be used in the mitigatory domain of accident management. The purpose of SAMGs is to guide the emergency	? tarkista design ohje!			X	Don't understand. The reason for the proposed new text is written in Finnish.

		response organization during severe accidents. The emergency operating personnel responsible for executing of the SAMG is normally within the technical support center (or equivalent) and the main control room teams.					No change proposed.
6.	8.16	Plant specific details should be taken into account in the identification and selection of the most suitable actions to cope with postulated ~~emergencies~~ design extension conditions - with core melting. The SAMGs should include the utilization of all possible means, safety related or conventional, permanent or mobilenon-permanent, in the plant or from neighbouring units or external, with the aim of preventing the release of radioactive material to the environment.	Please the consideration of the designed severe accident management systems should be included in the safety guide in line with DS.			X	"postulated emergencies design extension conditions" is exchanged to "severe accidents", a term defined in the glossary. Comment from ENISS
7.	8.18.E	The means of making interconnections between units should be addressed under a severe accident condition. The guidelines should consider the use of any available and inter-connectable means between units during a severe accident and/or a design extension condition. More information can be found in Ref. Severe Accident 28 Management Programmes for Nuclear Power Plants, IAEA Safety				X	No proposal of new text or reason for change is included in the comment.

		Standards Series No. NS-G-2.15 [11].					
8.	9.6.	Guidance specific to the plant should be provided in the following areas: (a) A clear definition of constraints specified in the safety analysis report and the OLCs; (b) Appropriate links between procedures to avoid omissions and duplication, and clear identification of entry and exit conditions; (c) Presentation to the operator in a manner conforming to good practice in relation to human factors, including clarity of objective and meaning, and use where appropriate of flow charts, diagrams and other aids to the operator; (d) The need for written explanations of the basis for the procedure, to assist the user and persons modifying the procedure in the future; (e) A verification and approval process that includes validation for the plant in question or for a simulation as relevant as practicable; (f) The use of EOPs for dealing with anticipated operational occurrences and accident conditions				X	No proposal of new text or reason for change is included in the comment. “anticipated operational occurrences” is removed. According to 8.7 is EOPs used for Accident conditions DBA and DEC. Comment from Germany. “Without fuel degradation” changed to “without significant core degradation” in order to be in line with the IAEA glossary. “Postulated emergencies” changed to severe accidents (beyond design basis accidents) also to be in line with the glossary. Comment from ENISS

		including DBA and DEC without fuel degradation, and the use of SAMGs for postulated emergencies design extension conditions with core melting.					

COMMENTS BY REVIEWER Reviewer: ? Country/Organization: FRANCE ASN IRSN Date: 17th October 2018				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	1.4	~~In addition the application of the recommendations of this safety guide will support the fostering of a strong safety culture.~~	Regarding the definition of "safety culture", there is no reason to enhance safety culture in the objective of this safety guide than in any other guide. Consider deletion or complementary explanation. Why does this sentence appear in DS 497?			X	Following the recommendations in the guide, especially the paragraphs of development of OLCs and OP will help fostering a strong safety culture. DS497 approved. This sentence has been added in each guide for consistency

2.	1.5	and other safety related activities ~~such as on-site emergency preparedness and response~~ in connection with the safe operation of nuclear power plants or such as on site emergency preparedness and response	According to the glossary, operation could be normal or abnormal (AOO) which could not be fully connected to EPR	Ok Text modified as:	and other safety related activities ~~such as on-site emergency preparedness and response~~ in connection with the safe operation of nuclear power plants or on site emergency preparedness and response		
3.	3.1	Consider deletion of ~~The OLCs should be contribute to maintain the independence between the levels of the defence in depth concept and ensure their adequate reliability~~ Or ~~The~~ Meeting OLCs ~~should be~~ contribute to maintain the independence between the levels of the defence in depth concept and ensure their adequate reliability	There is neither guidance neither added value with this “should” sentence. Besides, the corresponding requirement does not mention DiD. It is possible and obvious to affirm that meeting OLCs contributes to DiD as many other things but not OLCs by themselves			X	The change proposed by Germany is implemented. Reference is made to SF-1 about DiD. Would like to have reference to SSR 2/1 which have a well worded section on DiD.

4.	3.2	The OLCs should also define operational requirements to ensure that safety systems and , ~~including engineered~~ safety features, perform the ~~necessary~~ functions in ~~all~~ operational states, ~~and also~~ in design basis accidents (DBAs) and in ~~The OLCs should in addition cover safety features for~~ design extension conditions for which they are necessary. This covers ~~(including~~ equipment used for accident management ~~and severe accident management~~, permanently installed, portable and mobile)	Consistently with SSR-2/2, the recommendation for safety features should be the same as for safety systems Severe accident management is included in accident management	Ok Partly Text modified as:	…. to ensure that safety systems and ~~including engineered~~ safety features perform their ~~necessary~~ functions in all operational states, ~~and also~~ in ~~The OLCs should also in addition cover safety features for~~ design basis accidents (DBAs) and in design extension conditions (DEC) for which they are necessary. This covers ~~(including~~ equipment used for accident management ~~and severe accident management~~ (including severe accident management) permanently installed, portable and mobile, in their standby conditions.		"All" in "all operational states" must be kept because the glossary defines several states. Including severe accident management is kept within brackets for higher clarity. "In their standby conditions" is added adhering to a comment from Japan.

5.	6.3	6. LIMITS AND CONDITIONS FOR NORMAL OPERATION 6.3. …~~The independence of the defence in depth levels and barriers implemented in the plant should be maintained, observed when defining the minimum safe plant configuration~~	What is recommended in this sentence is not clear and the way it could be applicable is not understandable. It provides no guidance			X	When defining the minimum plant configuration equipment intended for use on e.g. level four in the DiD is not allowed to be used on level three. The reason being to maintain the independence between levels.
6.	8 - title	OPERATING PROCEDURES ~~AND GUIDELINES~~	To ensure consistency with current document title and requirement 26 title			X	Section 8 covers both req 26 and 19 in SSR 2/2. Requirement 19 is about Accident management programme and mentions both procedures and guidelines.

7.	8.1 – 8.1 A	8.1. All safety related activities should be performed in conformity with documents issued in accordance with approved administrative procedures. The availability and correct use of written OPs, including surveillance procedures, is an important contribution to the safe operation of a nuclear power plant. The Requirement 26 Ref.[1] states that "Operating procedures shall be developed that apply comprehensively (for the reactor and its associated facilities) for normal operation, anticipated operational occurrences and accident conditions". The Requirement 26 Ref.[1] points out that "procedures shall be developed for normal operation" and "shall be developed and validated for use in the event of anticipated operational occurrences and design basis accidents. Guidelines or procedures shall be developed for the management of accidents more severe than the design basis accidents". ~~8.1.A. In developing operating procedures, including emergency operating procedures for design basis accidents and design extension conditions - without significant fuel degradation and severe accident management guidelines (SAMG) for postulated emergencies (See Ref. Preparedness and Response for a Nuclear or Radiological Emergency Series No. GSR Part 7, IAEA, Vienna (2015) [14]), the influence of human and organizational factors on one, several, or all levels of defence in depth should be considered, to avoid any negative impact on the reliability of these levels and the independence between the levels~~.	Reference to GSR part 7 is not relevant here: guidelines for DEC more severe than design basis accidents are introduced by SSR-2/2 while GSR part 7 does not mentioned them. Besides, reference to DiD is not clear – GSR part 7 does not give such a reference – and does not provide worthwhile guidance.	Ok Partly Text modified as:	Reference to requirement 19 in SSR 2/2 added to paragraph 8.1. Reference to GSR part 7 moved from 8.1A to 8.16A. Reference to DiD is kept because the procedures and guides should ensure that equipment used on for example Did level 4 is not used on level 3. Reference to SF-1 added, see also comment on 3.1 above.		

8.	8.15 – 8.18	A straightforward reference to DS 483 is sufficient	The added value of these articles regarding DS 483 is not clear These articles should be reviewed to avoid both duplication and inconsistency with DS 483	Ok Partly Text modified as:	Paragraphs 8.15 – 8.17 are modified according to comments from other NUSSC members. Paragraph 8.18.A is deleted. In 8.17 the following text is added: For guidance about the interfacing between EOPs and SAMGs and the transition from EOPs to the SAMGs, see Ref. Severe Accident Management Programme for Nuclear Power Plants, Safety Standards Series No. NS-G-2.15, Vienna (2009) [11])		

9.	9.6	The use of EOPs for dealing with anticipated operational occurrences and accident conditions including DBA and DEC without fuel degradation, and the use of SAMGs for ~~postulated emergencies~~ design extension conditions with core melting	"postulated emergencies" is wording from GSR part 7 that covers more than SAMGs. The reference should be requirement 26 of SSR-2/2	Ok Text modified	The use of EOPs for dealing with anticipated operational occurrences and accident conditions including DBA and DEC without fuel degradation, and the use of SAMGs for management of accidents more severe than the design basis accidents.		
10.	10.1. A	~~A defence in depth approach should be applied to the controls necessary to ensure compliance with OLCs and OPs. Independent verifications of the compliance with OLCs should be regularly carried out by the operating organizationVi~~	This article does provide any worthwhile guidance: its application is not clear	Ok Partly Text modified as:	It is suggested to delet: ~~A defence in depth approach should be applied to the controls necessary to ensure compliance with OLCs and OPs.~~ Second sentence is kept.		

COMMENTS BY REVIEWER Reviewer: ? Country/Organization: Germany/ Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) (with comments of GRS) Date: 05.10.2018				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	1.5 / end of first page	Text is missing	Error by conversion of the text	Ok Empty line deleted			
2.	1.5 Line 6	The particular aspects of the procedures for maintenance, surveillance, in-service inspection and other safety related activities such as on-site emergency preparedness and response in connection with the safe operation of nuclear power plants are outside the scope of this Safety Guide	Does this include any aspects of radiation protection? If not, a short explanation should be given.	Agree But radiation protection is outside the scope of this guide.	Reference is made to NS-G-2.14 and GSR Part 3. A reference was missing regarding “response in connection with the safe operation of nuclear power plants” and GSR Part 3 was added to have a reference to Radiation Protection.		

3.	3.1 Line 7	~~The OLCs should contribute to maintain the independence between the levels of the defence in depth and ensure their adequate reliability.~~ The OLCs should be defined in such a way that the independence of the levels of defence in depth is ensured.	OLCs shall ensure the independence of the levels of defence in depth	Ok Text modified The proposed text is sharper and tells how to write them.	New text: The OLCs should be defined in such a way that the independence of the levels of defence in depth and their adequate reliability is ensured.		
4.	3.2 Line 1	~~From~~ In Requirement 6 of Ref. [1] is stated "The operational limits and conditions shall include requirements for normal operation, including shutdown and outage states, and shall cover actions to be taken and limitations to be observed by the operating personnel".".	We suggest to put here the complete quotation from Ref. [1]	Ok Text modified			

5.	5.3	The following are typical parameters…..: ….. • Radioactivity levels in the primary circuit; • Radioactivity levels in the steam line; • Radioactivity levels and levels of atmospheric contamination in the reactor building; • <u>Radioactivity level in exhaust air and waste water</u> • Loss of normal electrical power supply; …..	Exhaust air as well as released water are subject to permanent monitoring of effluents. They also require safety system settings. We suggest to include radioactivity level in exhaust air and waste water in the list of typical parameters, operational occurrences and protective system devices.	Ok Text modified			

6.	6.1 Line 3	…. In addition, acceptable margins should be ensured between the normal operating values and the established safety system settings to avoid undesirably frequent actuation of safety systems. <u>These margins allow for optimization of the safety system…..</u>	Margins may be subject to optimisation whereas the OLC should not be changed once decided. Aim is to avoid false alarms but to indicate a unnormal operation status as early as possible.			X	Suggested text and reasoning is in contradiction to each other. Besides that. The optimization of the safety system should be dealt with in the safety analysis report first.
7.	6.2	The limits and conditions for normal operation should include limits on operating parameters… The limits should also include parameters important to safety, such as the chemical composition of working media, their activity contents and limits on discharges of radioactive material to the environment…	Discharge limits are an essential part of the operating license. Up to here it seemed that discharge limits are not to be included as OLC. Please clarify.	Ok Text clarified	The limits should also include parameters ~~important to safety~~ that may be included in the licensing conditions, such as …..		See also the comment on 5.3 above

8.	6.5 Line 2	After an abnormal event, including a reactor trip, the cause of the event should be ~~established~~ determined, evaluated and appropriate remedial actions should be taken (see Ref. SSG-50)…	In SSG-50 these actions are well described and should be referenced here. Actions described here in text are more examples/extract	Ok Text modified	Text changed and reference to SSG-50 added		
9.	8.8A / (b)	~~(b) The risk of incidents is increased due to human error during maintenance and periodic tests~~	We are talking about EOPs in this section and not about HF failures. The operating personnel has not to perform tests during emergency situations.	Ok Text modified	The increased risk of incidents due to human error during fuel handling, maintenance and periodic tests;		It's not what personnel are doing during an emergency but about what they did before the emergency. A circumstance that should be taken into account in the EOPs.

10.	8.18 – 8.19	Delete completely	Avoid duplication with SSG-28 (argumentation as above). Also, not mentioned in the scope of this guide	Ok Partly Text modified	8.18.A is deleted. In 8.17 the following text is added: For guidance about the interfacing between EOPs and SAMGs and the transition from EOPs to the SAMGs, see Ref. Severe Accident Management Programme for Nuclear Power Plants, Safety Standards Series No. NS-G-2.15, Vienna (2009) [11])		

11.	In Chap. 8: MULTI UNITS ACCID ENTS	New, 8.18 F: <u>The EOPs and SAMGs should contain decision points and criteria for taking actions needed to ensure a safe operational status in other units (including a recommended shutdown of other units).</u>	Suggestion to add this item	Ok Text added	New paragraph E: The EOPs and SAMGs should contain decision points and criteria for taking actions needed to ensure the safe operation in other units than the ones affected by an accident at a multiple unit's plant site.		The new paragraph entered as 8.18E and old E is now F. Slightly modified to be more clear.
12.	9.6 (f)	The use of EOPs for dealing with ~~anticipated operational occurrences and~~ accident conditions including ~~DBA and~~ DEC without fuel degradation, and the use of SAMGs for postulated emergencies design extension conditions with core melting.	EOPs are for DEC and there should be no mismatch between OLC, operating procedures, EOPs and SAMGs. EOPs and SAMGs are dealt within NS-G-15 and should not be further regulated in this guide.	Ok Partly Text modified	The words "anticipated operational occurrences" is removed, but DBA is kept since EOPs are used for DBA and DEC. Compare with 8.7.		

13.	10.1A first line	A multi-layer ~~A defence in depth~~ approach …	Wrong wording: defence in depth is a design concept and not a quality assurance concept in nuclear business.	Ok Partly Text modified	The first sentence in 10.1.A is removed in response to a comment from France.		I disagree in the conclusion that DiD is only a design concept. Read SF-1 and SSR 2/1
14.	Appendix I	Limits and conditions for the availability and planned storage of consumables and spare parts at the site should be considered if they can have a major effect on plant safety	Should be added, as availability consumables and spare parts at the site can affect the plant safety	Ok Text added	New I 40 added I.40. Limits and conditions for the availability and storage of consumables and spare parts at the site should be considered if the they can have a major effect on plant safety		

15.	I.37	In opposite to the monitoring of liquid effluents that is typically done in discharge campaigns after the compliance with discharge levels was confirmed, the gaseous effluents are monitored online. It means that once an exceeded threshold is observed, the activity already left from the chimney.	Suggestion to add. Additionally, consider also the release from other pathways than the sewer and the chimney, especially in emergency situations.			X	Appendix I is for normal operation, not emergency situations. Release from other pathways in an emergency situation should be addressed in the EOP.
16.	Appendix II II.5	Validation of the procedures shall be aimed to ensure, that they are administratively and technically correct for the plant, are compatible with the environment in which they will be used and with the human resources available.	Should be added, as validation of the procedures is important.	Ok Text added	Added sentence to II.5: The purpose of validating procedures is to ensure that they are correct, achieve their purpose and are compatible with the technology and the human resources available		

17.	FIG. II.1. Flow diagram for the development of operating procedures		Printing error? Some text fields and shapes seem to be dislocated.	Agree	To be checked before publication		
18.	Annex EXAMPLE TO EXPLAIN SOME TERMS USED	Figure A–1: Title and numbering is missing Curves are missing	Include the title / reference for this figure	Agree	To be checked before publication		

COMMENTS BY REVIEWER Reviewer: ? Country/Organization: Japan Date: 09/10/2018				RESOLUTION			
No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	Para. 3.2	The OLCs should in addition cover safety features for design extension conditions (including equipment used for accident management and severe accident management, permanently installed, portable and mobile) in their standby conditions.	The safety features for design extension conditions are often required to continue its operation when required to be used, even if they are operated beyond operational limits. Generally speaking, the need of setting OLCs of each class of items important to safety should be determined corresponding to each operational states.	Ok Text modified			

COMMENTS BY REVIEWER Reviewer: Robert Exley Country/Organization: UK Office for Nuclear Regulation Date: 11 October 2018				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	3.2 5.3 6.4 Appendix I para 1.14	*Make changes as appropriate to ensure self-consistency, consistency with IAEA glossary and to provide necessary clarity between accident states and different*	To describe different modes of normal operation, and different accident conditions (regardless of starting conditions), different	Ok Text modified Changes	In 3.2 “operational states” is correct. The original text in SSR 2/2 Req. 6		To be in line with the terminology used in the IAEA glossary

		configurations/operating modes that occur in normal operation	terminology has been used. 3.2 uses "operational states" for different modes of operation 5.3 uses "plant states" for different modes of operation (e.g. low operating temperature) 6.3 and 6.4 use "mode" 6.5 uses "abnormal event", not AOO or DBA Appendix I 1.14 refers to modes.	have been made in 3.2, 5.3, 6.4, and in App. I §1.14	is "states" (not "stages")		
2.	4.5	Suggest deleting paragraph	Para 3.11 rightly states that it is essential that OLCs are meaningful and defined by measurable or directly identifiable values. Para 4.5 states that safety limits for pressure and temperature should be stated in relation to their design values. While this presentational approach can be useful and clear in safety cases, it may not be useful to operators on the plant responding to an event (unless the information is presented to them in that form). It could be an unnecessary burden establishing what			X	Safety limits in the OLC can be used by the operators <u>after an event</u> to make sure that no limits have been exceeded.

			are the design values and then checking measured values against these.				
3.	8.3	"For anticipated operational occurrences and accident conditions, the OPs should provide instructions for the return to a safe state"	The text currently suggests the OPs should return the plant from AOOs and accident conditions (all of them, including DEC?) to a safe state of operation. "Operation" for NPPs could be interpreted as power generation, or at least a shutdown operating mode that is "normal". However, this may not be possible. The 2016 IAEA glossary talks about "safe state". That would seem to be a reasonable end point without "of operation".	Yes Yes Yes			8.3 is reworded to only deal with procedures for AOO and DBA. For more severe events is guidance given in paragraph 8.6 and onwards
4.	8.10 (b)	Only a finite number of AOO, DBA and DEC-A events can be analyzed deterministically.	FSARs are not used in all countries. A more neutral term like "safety cases" or "safety analysis reports" (no capitalization) could be used. IAEA is now moving away from "beyond design basis".	Yes No action			Beyond design basis accidents is defined in the IAEA

							glossary.
			Historically, beyond design basis accidents may not have been analyzed, and the prescribed scopes for FSARs in some countries may still reflect this. However, there is now an IAEA expectation that DEC-A and DEC-B events are subject to deterministic analysis.	No action			Beyond design basis accidents is divided in accidents with or without significant core damage according to the glossary. Those two categories would correspond to DEC-A and DEC-B
			Para 3.2 rightly points out OLCs cover DEC events, and 8.1A states EOPs need to cover DEC-A events.	No action			
			The real limitation to event based procedures may be the uncertainty associated with extreme events, and trying to predict in procedures what could occur.	No action			Examples could be loss of all electric supply, including diesel generators or loss of the ultimate heat-sink.
5.	Appendix I para 1.3	Change or delete as appropriate	As written, this paragraph is talking about design, not OLCs or procedures. It could be reworded to say that limits on temperatures, xenon, etc. need to be identified so	Ok Text modified			

			that the provided design features can maintain sub-criticality for an indefinite period.				
6.	Appendix I para 1.6	The neutron flux parameters and values to be monitored for ensuring safe operation should be stated, including during startup and shutdown conditions. Adequate instrumentation to allow the adequate monitoring needs to be provided. It may also be necessary to stipulate the use of neutron sources to provide the minimum flux level for neutron detectors.	As written, this is talking about instrumentation needs, not OLCs or procedures.	Ok Text modified			
7.	General comment/observation		Technical Specifications are a widely used means of achieving some of the expectations set out in NS-G-2.2 but they are not mentioned. Is there value in mentioning them, while also pointing out they will need to be supplemented by other approaches to achieve all the outcomes desired?	Yes Foot-note inserted in paragraph 1.2:	*Operational limits and conditions* correspond to the term *Technical specifications* used in some member states.		

COMMENTS BY REVIEWER Reviewer: ? Country/Organization: United States of America/NRC Date: 10-11-2018				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text/comments	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	NS-G-2.2 Page 7 (Forward)	New proposed text: The following advisory bodies oversee the development of safety standards: the Commission for Safety Standards (CSS); the Nuclear Safety Standards Committee (NUSSC); the Radiation Safety Standards Committee (RASSC); the Transport Safety Standards Committee (TRANSSC); and the Waste Safety Standards Committee (WASSC). Old text: The following advisory bodies oversee the development of safety standards: the Advisory Commission for Safety Standards (ACSS); the Nuclear Safety Standards Advisory Committee (NUSSAC); the Radiation Safety Standards Advisory Committee (RASSAC); the Transport Safety Standards Advisory Committee (TRANSSAC); and the Waste Safety Standards Advisory Committee (WASSAC).	The proposed new text reflects the names of the current IAEA safety standards committees. The old text reflects the non-existent advisory bodies, and should be removed.	Ok Text modified			
2.	NS-G-2.2 Para 3.2, last	Proposed text changes: "The OLC's ~~should~~ may, but need not ~~in addition~~ cover safety features for design extension conditions …"	DECs are analyzed using realistic or best estimate analyses, with large	No action	Observe that para 3.2 has been largely changed	X	"features of design" is the equipment. It has no (direct)

	sentence		uncertainties, so it may not be practical to establish bounding OLCs for the safety features.				connection to the analyses.
3.	NS-G-2.2 Para 10.6	Modify Para 10.6 (d) to change the word "on" to "at," in the following: "Records of releases of gaseous and liquid radioactive materials to the environment, and of solid and liquid radioactive wastes accumulated at ~~on~~ the site;"	Clarity & Edit	Ok Text modified			
4.	NS-G-2.2 Para 10.6	Add a new item: l. Maintain and update worker's records of radiological and hazardous exposures.	Completeness of records of operation limits and conditions.			X	Workers records of radiological and hazardous exposure is outside the scope of the OLC and OPs.
5.	NS-G-2.2 Update References	NS-G-2.2 cites many references and documents that were revised and published several years ago. The updated versions of these documents should be referenced. For example, NS-G-2.2 cites WS-G-2.1 Ref [7], which was revised/superseded by GSR Part 6 and DS452 (approved for publication).	Update reference documents cited in the text and in the reference list.	Ok Text modified			WS-G-2.1 was superseded by SSG-47 according to IAEA web-page. All other references have been checked. GSR Part 6 supersedes two other WS-standards.

6.	NS-G-2.2 Page 42 Figure II-1	Figure II-1 is very difficult to understand. It needs to be edited, and the boxes representing decision points need to be linked.	Edit for clarity	Agree	To be checked before publication		
7.	NS-G-2.2 Para 8.8.A Page 24	Missing text: “Depending on shutdown and spent fuel conditions, EOPs should take into consideration specific constraints like _____”	The last sentence in Section 8.8.A seems to missing the sentence end.	Ok Text modified			
8.	NS-G-2.2 Pages 26-27	Check paragraph order	8.16 and 8.16.A appear out of order	Agree	Old 8.16.A is now 8.16 Old 8.16 is now 8.16.A		
9.	NS-G-2.2 Para 8.16.A	“The operating personnel responsible for executing of the SAMG ~~is~~ are normally….”	Make a correction to verb usage in the last sentence in 8.16.A	Ok Text modified			