Revision of 7 closely interrelated Safety Guides on the Operation of Nuclear Power Plants: NS-G-2.2 to 2.6, NS-G-2.8 and NS-G-2.14 (DPP DS497 indice 2)

DS497A – NS-G-2.2: 29 comments / Accepted (fully or partially): 23 (79%) / Rejected: 6 (21%)

Some comments are multiple: one part can be accepted and another rejected; hence, total of "accepted" and "rejected" is not equal to number of comments

Country or Organization	Number of comments	Accepted	Rejected
KOREA	1	1	
USA	10	10	
FRANCE	1		1
ENISS	6	6	
WNTI	0		
JAPAN	2	1	1
UK	1	1	
FINLAND	8	4	4

COMMENTS BY REVIEWER Reviewer: Page 1 of 1 Country/Organization: Republic of Korea / Korea Institute of Nuclear Safety (KINS) Date: ~~05/10/2020~~ 14 October 2020 (after the deadline)				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	2.3 / Line 2	The OLCs should include the limits that must be observed, as well as the operational requirement that structures, systems and components important to safety ~~ned~~ need to meet to perform their intended functions as described in the safety analysis report for the plant.	Typo error	X			

COMMENTS BY REVIEWER Reviewer: Japan NUSSC Member Pages: 2 Country/Organization: Japan / Nuclear Regulation Authority (NRA) Date: 9 October 2020				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	2.15.	When it is necessary to modify OLCs on a temporary basis, for example to perform physics tests on a new core, it should be ensured that the effects of the change are fully analysed, and that the modified state, although temporary, involves at least the same level of assessment and approval of the OLCs as a permanent modification. When a permanent approach is available as a reasonable alternative, this should be preferred to a temporary modification of an OLC. Otherwise, the temporary OLCs should be surely removed once their roles are fulfilled.	This is a lesson learned from not a few operating experiences. If the temporarily modified OLC remains valid after testing without returning, some problems can be caused.			X	I understand, nevertheless, “If the temporarily modified OLC remains valid after testing without returning, some problems can be caused”, this is not in accordance with the para 4.15 of SSR-2/2 (Rev.1); see also para 2.14 of NS-G-2.2. And your proposal is not the subject of the para 2.15.

2.	4.1.	Safety system settings will be established in terms of a range of parameters. These include the parameters in terms of which safety limits are established, as well as other parameters (or combinations of parameters) that could contribute to pressure or temperature transients. Exceeding some safety system settings will cause the reactor to automatically shut down. Exceeding other safety system settings will result in other automatic actions to prevent safety limits from being exceeded. Other safety system settings are provided to initiate the operation of ~~engineered~~ safety systems. ~~Engineered~~ safety systems limit the course of anticipated operational occurrences in such a way that either safety limits are not exceeded, or the consequences of postulated accidents are mitigated. The interrelationship between safety system settings, safety limits and limits for normal operation is illustrated in the Annex.	Please clarify 'engineered safety systems'. It only means protection system.	X According to the IAEA safety glossary, 2018 Edition, the terminology 'Engineered safety systems' does not exist. As a result, the 'Engineered' word will be deleted twice in this para.			

COMMENTS BY REVIEWER Country/Organization: France pages			Date: 13/10/2020 (after the deadline)	RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	7.20	Symptom based emergency operating procedures can resolve some of the limitations of the event based approach by formally defining and prioritizing the critical safety functions. In symptom based procedures, the decisions on measures to respond to events should be specified with respect to the symptoms and the state of the plant (such as the values of safety parameters and critical safety functions). This allows optimum operating characteristics to be maintained in the absence of information about the continuing accident scenario. Continuous and repetitive diagnosis may help to correct any initial misdiagnosis and to ensure that the operators respond to changing plant conditions that could be more threatening to the core integrity than the initial event.	Please add the proposed sentence that is technically relevant and provide worthwhile guidance			X	The proposed sentence is correct, but the text is coming from the Safety Report 48, page 11, and the para 7.24 of NS-G-2.2 guides the reader to use this reference. We try to avoid duplications in this set of safety guides as much as possible.

COMMENTS BY REVIEWER Reviewer: P. Malesys, S. Edwards Country/Organization: WNTI			Page 1 of 1 Date: 9 October 2020	RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		No comment					

COMMENTS BY REVIEWER Reviewer: Country/Organization: ONR/UK			Page..1.. of..1.. Date: 8 October 2020	RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	1.6	"…..to meet Requirements 6 and 26 of SSR-2/2 (Rev. 1) [1], respectively."	Typo – Text refers to Recommendation 16 of SSR2/2 (Programme for long term management) instead of Recommendation 26 (Operating procedures)	X Agree but it is well written 16.			

COMMENTS BY REVIEWER Reviewer: ENISS Country/Organization: ENISS			Page 1 of 4 Date: 09.10.2020	RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	1.4.	The terms used in this Safety Guide are to be understood as defined and explained in the IAEA Safety Glossary ~~[9]~~ [X]	The Safety Glossary is missing in the chapter REFERENCES. Reference No [9] is IAEA Safety Standards Series No. SSG-3 on PSA Level 1.	X			
2	2.1.	Paragraph 4.6 of SSR-2/2 (Rev. 1) [1] states: "The plant shall be operated within the operational limits and conditions to prevent situations arising that could lead to anticipated operational occurrences or accident conditions, and to mitigate the consequences of such events if they do occur. The operational limits and conditions shall be developed for ensuring that the plant is being operated in accordance with design assumptions and intent, as	Please don't forget to provision SSR-2/1 Rev1 [5] (Requirement 7 - Application of DiD): *"The design of a nuclear power plant shall incorporate defense in depth. The levels of defense in depth* ***shall be independent as far as is practicable."***	X			

		well as in accordance with its licensing conditions." 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 as far as is practicable.					
3	5.6.	When it is necessary to remove a component of a safety system from service, confirmation should be obtained that the safety logic continues to be in accordance with design provisions. The performance of a safety function might be affected by process conditions or service system conditions that are not directly related to the equipment performing the function. It should be ensured that any such effects are identified, and that appropriate ~~limits~~ restrictions are applied to ensure that the minimum safe plant configuration is maintained	At this point a word other than the limit should be used to avoid misconception that it is a safety limit from OLCs	X			
4	7.3	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, the influence of human and organizational factors on the levels of defence in depth should be considered. ~~The operating procedures should be defined in such a way that the independence of the levels of defence in depth and their adequate reliability is ensured (see paras 2.12–2.14 and Requirement 7 of SSR-2/1 (Rev. 1) [2]).~~	The reader/applier of the Standard will have major difficulties in interpreting, what is the real meaning of and what is really required by Para 7.3. The particular problem here is that independence of different levels is quite easily understood for DiD as the design concept, but it is by far more abstract to think about independence of different levels in terms of the operating procedures. The sympton based procedures do not start by defining the level of DiD. In general, once the transient/accident has already	X			

			happened the DiD levels should have only minor meaning. The clear exception is the interface when accident enters into the severe accident mitigation domain. Then there has to be a clear transition between EOPs and SAMGs. Even then SAMGs for the existing plants will rely heavily on the equipment that were designed for the other DiD levels. Therefore, it should be avoided to include in the standards any requirements that cannot be defined in pragmatic terms.				
5	**APPENDIX II** II.2.	The drafting of operating procedures (Box 1) should normally be done by operating personnel (Box 1). The main documents used as references should include: (a) Documents containing design bases, requirements, assumptions and intentions; (b) Contractual documents, documents of original designer and plant suppliers and relevant equipment specifications giving guidance on the operation of systems and components; (c) Commissioning documents (see section 5 of SSG-28 [16]); (d) Documents containing procedures from other plants of the same or similar type.	ad a) the document originators use the terms design assumptions and intent, as they include the already published SSG-2/2, but these terms don't entirely cover the essential information ad b) the word contractual doesn't explain clearly what kind of sources should be used mainly during procedures preparation	X X			

6	**APPENDIX II** II.3.	Operating procedures are required to be developed in accordance with regulatory requirements, as well as with the policy of the operating organization as contained in the management system: see Requirement 26 of SSR-2/2 (Rev. 1) [1]. It should also be ensured that procedures are consistent with the safety analysis report, plant design documentation and with OLCs.	Plant design documentation including Design Basis and Requirements is the fundamental source. SAR and OLCs are just derived documents from it.	X			

COMMENTS BY REVIEWERS					RESOLUTION			
Reviewer: U.S. Nuclear Regulatory Commission								
Country/Organization: U.S. Nuclear Regulatory Commission				Date: 14 October 2020				
Comment No.	Draft Safety Guide No.	Para/ Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	DS497A	4.1	Engineered safety systems limit the **reactor systems response** in such a way that either safety limits are not exceeded, or the consequences of postulated accidents are mitigated.	The draft wording makes it sound like the engineered safety systems' function only applies to AOOs, but they have functions during less frequent postulated accidents as well. The proposed wording makes the applicability of the engineered safety systems' function more general.	X			
2	DS497A	5.1	Limits and conditions for normal operation are intended to ensure safe operation; that is, to ensure that the assumptions of the safety analysis report **remain applicable to the operating conditions** and that	Safety analyses are generally determined to be "valid" prior to operations, so the purpose of the limits and conditions are to ensure that the analyses remain applicable to real world operating conditions, rather than to "validate" the analysis assumptions.	X			

			established safety limits…					
3	DS497A	9.9	..to avoid the accidental deletion or retention of an OLC or its **incorrect** application.	Clarification.	X			
4	DS497A	I.4	…to ensure that the assumptions used in the accident and transient analyses **remain applicable to the operating conditions** throughout each fueling cycle.	Similar to Comment 2 above.	X			
5	DS497A	I.17	Limits on the total reactor power should be established and defined in the **OLCs and** safety analysis report…	Omitting the OLCs here seems odd, considering how most of the guidance in this Appendix is phrased.	X			
6	DS497A	2.3	"requirement that structures, systems and components important to safety ~~ned~~ need to meet to perform their…"	"need" was spelled incorrectly	X			
7	DS497A	2.4	2.4. Safe operation depends upon personnel as well as on equipment and procedures; therefore, OLCs should also include the actions to be taken when limits are exceeded or equipment important to safety ~~does not~~ is not capable of performing its intended functions.	The actions should be proactively taken if equipment is determined to not be able to perform its safety functions.	X			

8	DS497A	2.11	Each OLC should have associated surveillance requirements that ~~support the operating personnel in ensuring~~ verify compliance with the OLC.	This statement is not clear. Consider removing this statement	X			
9	DS497A	2.12	2.12. OLCs should be ~~meaningful to responsible operating personnel, and should be~~ defined by directly measurable (or directly identifiable) values of parameters.	This statement is not clear. Consider deleting this statement.	X			
10	DS497A	6.1	6.1. In order to ensure that safety system settings and limits and conditions for normal operation are met ~~at all times~~ in the applicable modes, the relevant systems and components should be monitored, inspected, checked, calibrated and tested in accordance with an approved surveillance programme	Clarification for applicability	X			

COMMENTS BY REVIEWER Reviewer: M-L Järvinen Page.... of.... Country/Organization: Finland/STUK Date: 7 October 2020				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	General	Please check the use of term radioactive material. The term radioactive material is used 11 times in the document. Please change material to substance. Radioactive material is under regulatory control. Radioactive releases are radioactive substances in line with IAEA Glossary.		X			
2.	General	Please check the use of term severe accident guideline. If severe accident management systems are installed on should use procedures. SSG-54 uses procedures and guidelines.	Please replace guidelines with procedures and guidelines.			X	1. SSG-54 uses 'severe accident management guidelines' (SAMGs). See paras 1.6 and many others. 2. Out of the scope of the DDP.
3.	3.1	The concept of safety limits is based on the prevention of unacceptable releases of radioactive substance ~~material~~ from the plant through the application of limits imposed on the temperatures of fuel and fuel cladding, and on the coolant pressure, pressure boundary integrity and other operational characteristics influencing the release of radioactive material from the fuel. Safety limits are intended to protect the integrity of certain physical barriers that guard against the uncontrolled release of radioactive material.	Please change material to substance. Radioactive material is under regulatory control. Radioactive releases are radioactive substances in line with IAEA Glossary.	X			

4.	3.3	The safety limits should be chosen with the objective of maintaining the integrity of the fuel cladding and the integrity of the pressure boundary of the reactor coolant system under all conditions, thus ensuring that there is no significant release of radioactive substance ~~material~~.	Please change material to substance. Radioactive material is under regulatory control. Radioactive releases are radioactive substances in line with IAEA Glossary.	X			
5.	7.27	Severe accident management guidelines should be developed from accident management strategies and the measures to be used to mitigate the consequences of accidents. The purpose is to provide guidance for the on-site emergency response organization during severe accidents. The operating personnel responsible for executing the severe accident management guidelines are the main control room operators and staff in the technical support centre at the site (or equivalent). Staff at a technical centre at a corporate, regional or national level can also use the guidelines in providing support to the affected site. All such personnel should be trained in the use and application of the severe accident management guidelines.	The procedures and guides for the operator should be separated from the emergency procedures which is the case in some Member States. Please update and align with SSG-54.			X	Comment from the reviewer not clear enough without proposed new text. What is written in the para 7.27 is not in contradiction with paras in the section 4 of SSG-54. I do not see what to update and align with SSG-54. Agree to discuss based on clearer comment.
6.	7.28	Plant specific details should be taken into account in the identification and selection of the most suitable actions to cope with severe accidents. Severe accident management guidelines are required to include all possible means — safety related and conventional; permanent and non-permanent; in the plant, from neighbouring units and off-site — with the aim of maintaining the integrity of the containment and	Please clarify and align with SSR-2/1 and SSG-54. For new NPPs severe accident management systems are designed from the beginning. The safety demonstration of new NPPs is not based on mobile equipment. In SSR-2/1 **Requirement 33: Sharing of safety**			X	Comment from the reviewer without proposed new text. What is written in the para 7.28 is not in contradiction with para 5.8A of SSR-2/2 (Rev.1).

		preventing the release of radioactive material to the environment: see para. 5.8B of SSR-2/2 (Rev. 1) [1].and GSR Part 7 [13].	**systems between multiple units of a nuclear power plant. Safety systems shall not be shared between multiple units unless this contributes to enhanced safety.** 5.63. Safety system support features and safety related items shall be permitted to be shared between several units of a nuclear power plant if this contributes to safety. Such sharing shall not be permitted if it would increase either the likelihood or the consequences of an accident at any unit of the plant.				Paras 7.32-7.34 cope with accidents at multi units' site.
7.	~~7.43~~ 7.34	The means of making interconnections between units on a multiple unit site should be addressed in the severe accident management guidelines. The severe accident management guidelines should consider the use of any available interconnectable means between units during design extension conditions.	Please clarify and align with SSR-2/1. **Requirement 33: Sharing of safety systems between multiple units of a nuclear power plant. Safety systems shall not be shared between multiple units unless this contributes to enhanced safety.** 5.63. Safety system support features and safety related items shall be permitted to be shared between several units of a nuclear power plant if this contributes to safety. Such sharing shall not be permitted if it would increase either the			X	Comment from the reviewer without proposed new text. What is written in the para 7.34 is not in contradiction with para 5.8A of SSR-2/2 (Rev.1): "Potential interactions between units shall be considered in the accident management programme".

			likelihood or the consequences of an accident at any unit of the plant.				
8.	8.10.	Empty paragraph.	Please delete paragraph number 8.10.	X			