

TITLE : DS 481 DPP Design of the Reactor Coolant System safety guide

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: IRSN		Page					
Country/Organization: FRANCE / IRSN		Date: 17 sept 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	Para 4/line 1	The main objective of the revised Safety Guide is to provide guidance on how to meet the current design safety requirements in relation with the Reactor Coolant System and Associated Systems (RCSAS) in Nuclear Power Plants (NPPs) recently established in SSR-2/1 and applicable feedback of experience from the Fukushima accident	To be consistent with other sections and action NUSSC 35.2	YES			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:		Page ...of					
Country Organization: Japan/NRA		Date 2013/ 9/20					
Comm ent No.	Para./Line No.	Proposed new text	Reason	Acce pted	Accepted but modified as follows	Rejec ted	Reason for modify/rejection
1	3. JUSTIFICAT ION	Add as the last sentence as follows: <u>This guide should be consisted with requirements in SSR-2/1 amended by DS 462.</u>	Consistency with DS 482 taking into account revised SSR-2/1 amended by DS 462.	-	The intention of the comment is taken into consideration. However, it fit better in the section on Objective and Scope, where a comment from France in a similar sense has been accepted	-	
2	5. after the last bullets.	Add · Safety Classification of SSCs in NPPs, DS 367.	There are already listed in the overview as “Safety classification”.	YES			
3	6. OVERVIEW L3	... the Fukushima <u>daiichi nuclear power plants</u> accident...	Adequate expression not “the Fukushima Accident” but “the Fukushima <u>daiichi nuclear power plants</u> accident” exactly.	YES			
4	ANNEX1	As part of the IAEA Nuclear Safety Action Plan approved after the accident at <u>the</u> TEPCO’s Fukushima Daiichi nuclear power <u>plants</u> in March 2011,	Editorial. Omitted word	YES			
5	ANNEX1	NS-G-1.9 needs to reflect i.a. <u>i.e.</u> current terminology and requirements on plant conditions, e.g. design extension conditions, defence in depth and design basis.	Editorial. It does not make sense in “i.a.”	NO		YES	i.a. stands for Latin “inter alia” meaning “among other things”, while i.e. stands for Latin “id est”, meaning "that is."

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: ENISS Page 1 of 2 Country/Organization: ENISS Date: 23 Sept. 2013							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	General comment	The current NS-G-1.9 as well as the DPP focus very much on water cooled reactors. Only a very limited part of these NS-G-1.9 as well as of the content provided in section 6 of DPP DS 481 are recommendations for other reactor types. As the design of the reactor coolant system and associated systems for NPP are very much dependent on the reactor type, we suggest to renaming the guide to “Design of the Reactor Coolant System and Associated Systems for water cooled Nuclear Power Plants”, as it is stated para. 1.5 of the existing NS-G-1.9. For the other NPP types a tecdoc or a special section could provide further guidance.		NO		YES	This is true, but SSR 2/1 is also written for water cooled reactors as well as several other SGs. If accepted, this change to the title should be consistently applied to other documents.
2	Section 2/ last sentence.	Among those related to the Reactor Coolant System and Associated Systems (RCSASs), the reliable use of mobile sources for cooling, the diversification of ultimate heat sink, as well as the sufficient provision of safety margins to avoid cliff edge effects can be noted.	According to the understanding in the drafting group for DS 462 the notion of cliff-edge effects should be avoided.	Yes, partially	We accept the modification, but not the elimination of the cliff edge effect concept, which is part of SSR 2/1. Its use should be carefully considered		
3	Section 4 - 4th bullet	The revised Safety Guide will provide safety recommendations on the features for design extension conditions that are may be needed to prevent core damage at high pressure conditions and to cool the fuel after a severe accident.	Some designs may not need further features to prevent core damage at high pressure etc.	Yes			
4	Section 4 - 5th bullet	The Safety Guide will cover the gap existing on safety recommendations on structures, systems and components connecting the ultimate heat sink (final	This bullet seems to say the Safety Guide will identify the missing systems (i.e. not covered by other Safety	NO		YES	SG needs to ensure no gap in connection to the UHS. Currently is not clear, if

		<p>water body or the atmosphere absorbing to residual heat) and the current set of systems covered by the Safety Guide.</p>	<p>Guides) - but that cannot be so as each design is different so one cannot state which systems are addressed by which safety guide. We suggest to delete or clarify this bullet.</p>				<p>“service water” systems are totally covered.</p>
5	<p>Section 4 / 2nd page 6th bullet</p>	<p>The safety recommendations for RCSASs will be analysed and amended as appropriate taking into consideration <u>the possible introduction of</u> passive safety features that are being introduced in the newest designs for RCSAS systems <u>of certain reactors</u>.</p>	<p>Not only newest designs include passive safety features. Furthermore, the initial writing may have confused some readers by giving the impression designs without passive safety features should not be considered as new and / or that new designs should include passive safety features !</p>	YES			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: contact: Thomas.Froehmel@eon.com		Page.... of....					
Country/Organization: WNA		Date: Sept. 6, 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	Section 4 / 2 nd page 6 th bullet	The safety recommendations for RCSASs will be analysed and amended as appropriate taking into consideration <u>the possible introduction of</u> passive safety features that are being introduced in the newest designs for RCSAS systems <u>of certain reactors</u> .	Not only newest designs include passive safety features. Furthermore, the initial writing may have confused some readers by giving the impression designs without safety features should not be considered as new and / or that new designs should include passive safety features !	Yes	Comment Repeated Comment with the same text provided by ENISS		
2	Section 6 / Page 3	3 GENERAL CONSIDERATIONS IN DESIGN ... Postulated initiating events <u>List to be completed to address design extension conditions and severe accidents</u>	Should not be limited to postulated initiating events	YES	DECs will be considered but are not PIEs		
3	Section 6 / Page 3	3 GENERAL CONSIDERATIONS IN DESIGN ... - Design provisions for in-service inspection, testing and maintenance <u>List to be completed to address commissioning as well and specific 'first of a kind' instrumentation, and de-commissioning</u>	Should not be limited to ISI, testing and maintenance	YES	Partially First of a kind instrumentation should not be something to be standardized. Instrumentation, excluding general considerations, belong to other SG. Same on decommissioning. It should belong to WS-G-2.1		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: United States of America							
Country/Organization: US Nuclear Regulatory Commission Date: 24 September 2013							
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	General comment	In its current state, NS-G-1.9 does not address some reactor (especially PWR) systems equivalently with other designs.	Take care to provide equivalent treatment of available reactor designs, or explain the rationale for selection of systems treated in this guide.	Yes	No impact on DPP		
2	General comment	The scope of the types of newer nuclear power plants to be addressed in DS481 is unclear. NUSCC proposes to update the Appendices and Annexes in Safety Guide NS-G-1.9 to address new plant design aspects. But, it is unclear which new plants will be included in the update. For example, should DS481 include new plants such as large, passive LWRs (e.g., AP1000, ESBWR)? Should DS481 include small-modular reactors and integral PWRs, and, if so, which ones (e.g., mPower, NuScale, Westinghouse SMR, Toshiba 4S, Hyperion, sodium-cooled fast reactors, high-temperature gas-cooled reactors, etc.)?		Yes	SG will address: Reactors for which SSR 2/1 is applicable Reactors commercially available, not reactors with unique features, innovative reactors, fast reactors, unfinished designs, etc. for which standardization is not meaningful. AP1000, ESBWR? :Yes mPower, NuScale, Westinghouse SMR, Toshiba 4S,		

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					Hyperion, sodium-cooled fast reactors, high-temperature gas-cooled reactors?: No		
3	General comment	NUSCC proposes to update NS-G-1.9 to reflect new requirements on plant conditions such as “design extension conditions.”	It is unclear what scope of design extension conditions will be treated in this document.	Yes	SBO, ATWS, PIEs with multiple failures in ECCs (Analysis still pending). Decision during the elaboration of the SG		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Canadian nuclear industry and Canadian Standards Association Country/Organization: CANADA				Date: Sep. 17, 2013			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	Section 4 Objection & Scope (bullet 5)	The Safety Guide will cover the gap existing on between safety recommendations on structures, systems and components connecting the ultimate heat sink.	Replace “on” with “between”.	Yes			
2	Section 6 Overview	Under 4 “specific considerations in design”: 7. SPECIFIC CONSIDERATIONS IN DESIGN Support systems (power, air, etc.) ...	Suggest adding the specific design considerations for support systems (power, air, etc.).			YES	These systems are not part of the scope of the SGs. It there would be something to indicate, it would be under General Considerations
3	Section 6 Overview	3. GENERAL CONSIDERATIONS IN DESIGN Instrumentation and control system ... 4. SPECIFIC CONSIDERATIONS IN DESIGN Instrumentation and control system ...	Recommend to move ‘Instrumentation and Control System’ from ‘3. General Design Consideration in Design’ to ‘4. Specific Considerations in Design’. Instrumentation and control system will be different depending on the safety class of the various systems addressed in Section 4. Hence the need to provide specifics on I&C instead of general consideration only.			YES	The SG should stay general as it is currently. Section 4 provides recommendations for the specific systems in the scope of the SG. I&C is not a system under the scope of the SG. There is a dedicated SG for I&C. Recommendations on the I&C for RCS or an RCSAS will be given in the corresponding subsection.
4	4. Objective and Scope	Suggest to add:				YES	The analysis of applicability to

		This revision is intended to apply primarily to new plants, and as the updated requirements might not be fully met at some existing plants designed to earlier standards, a specific section addressing recommendations and guidance on how to strengthen the capabilities of the existing systems will be provided.					specific existing designs should not be part of the SSs. This analysis is to be done by each licensee. It is not affordable to include such a section.
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COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Page 1 of 1 Country/Organization: Ukraine/ State Scientific and Technical Centre for Nuclear and Radiation Safety (SSTC NRS) Date: 26 September 2013							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	Section 6 "Overview"	The content of new revision of document NS-G-1.9 includes a list of RCS associated systems (section 4). For certain reactor designs (e.g. VVER) the following systems may be used for fuel cooling in the core in case of abnormal situations and design extension conditions: - spent fuel cooling system; - containment spray system. Specific considerations in the design of the above mentioned systems and interactions with RCS should be included in section 4 of new revision.	Fukushima lessons (Section 4, Bullets 2, 4 and 7 on page 2. Item 2.7 of NS-G-1.9 – "System interactions with the RCS should be taken into consideration in designing the RCSASs".			YES	The SG should provide general recommendations, but not address specific technical solutions. In every plant design there would be different alternatives for one system to back up other. These are not "independent safety features for DEC". In any case, the recommendations on the design of such systems don't belong to this SG but to the SGs on fuel storage and handling, and on containment systems

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Reviewer: Page 1 of 1 Country/Organization: Ukraine/ State Scientific and Technical Centre for Nuclear and Radiation Safety (SSTC NRS) Date: 26 September 2013							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
2	Bullet 2, page 2	It is proposed to complement the existing formulation as follows: “In general, the terminology of the Safety Guide needs to be revised and made consistent with the new definition of plant state categories introduced in SSR 2/1, i.e. the inclusion of design extension conditions and the consideration of severe accidents in the design basis. The sections on design basis and postulated initiating events need to be revised respectively”.	Since design extension conditions and severe accidents are considered in the design basis, it is proposed to revise the list of postulated events as well.	Yes (Partially)	DECs is a new subjects to be included, but DEC are not postulated initiating events. List of PIEs will not be revised.		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: GD		Page.... of....					
Country/Organization : FRANCE/MEDDE		Date: 23-09-2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1		This document does not present any reference to nuclear security document. Reference to NSS13 and NSS4 should be added.		?	Not sure where to put them and for which purpose		

