

TITLE: DPP 488 Design of the Reactor Core for Nuclear Power Plants

COMMENTS BY REVIEWER				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
Reviewer: ENISS / Date: 22 May 2014							
1	Section 2, Pg. 3	That is, in design it is needed to include provisions to avoid short term cliff edge effect in case of an <u>for</u> extreme external hazard of an intensity or a duration of accident exceeding the one considered as the general design basis and in case of complex combination of events. It is also needed in design to ensure that critical safety systems or components can remain operational in- (design extension conditions).	The wording “cliff edge effect” should be avoided (it has been already widely discussed during SSR2/1 consultancy meetings. “Complex combinations of events” has no definition. The last sentence is addressed in DECs.		Rephrase: “That is, in design it is needed to include provisions to avoid short-term cliff-edge effect in case of an extreme external hazard of an intensity or a duration of accident exceeding the one considered as the general design basis (design extension conditions).”		“Cliff-edge effect” has been used as a standard statement to describe a phenomenon that occurs under design extension conditions.
2	Section 4. Pg. 2	This publication is intended for use by organizations designing, manufacturing, constructing and operating NPPs and <u>fuel facilities</u> , as well as by regulatory bodies.	Not only NPPs are concerned			X	The Guide is mainly governed by SSR-2/1 which is for the safety requirements for NPP. Fuel cycle facilities are covered by NS-R-5.

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3	Section 4.	This publication is intended for application to thermal nuclear <u>facilities</u> reactors that are land-based.	The publication should also be applicable to other facilities (e.g floating NPPs)			X	The comment is noted and is tabled for discussion in the NUSSC meeting. The governing requirements document SSR-2/1 does not apply to floating NPPs.
Reviewer: STUK, Finland / Date: 28 May 2014							
1.	General	<p>The guide is intended to be used for the design of the reactor core for nuclear power plants. However some analysis aspects are presented in the TOC and in page the guide is presented to give guidance to meet the design requirements and the safety assessment requirements.</p> <p>The guide should present clearly the design requirements. The safety assessment requirements should be in a separate guide. If both these two aspects are to be presented in the guide there should be to separate parts to avoid the situation that design requirements are set through safety assessment and analysis requirements.</p>				X	The comment is noted but not accepted, because: (1) Design requirements cover all areas considered in the design process; safety assessment requirements must be considered as part of the design process (requirement 10, SSR-2/1); (2) Safety analysis is one essential element for the safety assessment; therefore, safety assessment/safety analysis cannot be excluded from this Guide.

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Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
2.	Page 3.	...NS-G-1.4, 2003 (to be updated under DS487)	Add the updating of the guide NS-G-1.4.	X (Incorporate as suggested)			
3.	Page 3.	... NS-G-1.9 (to be updated under DS481)	Typing DS482 is the update of reactor containment systems	X (Incorporate as suggested)			
Reviewer: ANS, France / Date: May 2014							
1.	Section 5		Is there any relevant Nuclear Security publication to the topic addressed in the DS? If yes, they should be added or it should be stated that none have been identified.	X (The sentence "None of nuclear security publications are identified relevant to the Guide" is added in Section 5)			

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Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
2.	Section 5		Add the references of the Safety Standards (requirements and guides) dealing with management system as §5 of tentative table of contents includes a chapter on management system See also next comment	X (Incorporate as suggested)			
3.	Section 7		It seems that approval by SSC can occur in Q3/2014 and CSS approval in Q4/2014. The goal for target publication may therefore be advanced.				Comment is noted; DPP approvals by SSC and CSS can be advanced as commented. Considering a long and uncertain process for member States' review and comment, however, the target date for the completion of the revised Guide remains unchanged.

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4.	Tentative ToC		Is there an actual need to provide recommendations on management system?				Section 5 Management System for Design is intended to cover QA and Documentation for Design which is interfaced with “the Management System for Facilities and Activities”, GS-R-3, 2006 (To be updated under DS456.)
5.	Tentative ToC		Why having appendix III as there is, in chapter 3, a section on the same topic...				Appendix III describes safety parameters considered for core management design, while the subsection of Core Management in Section 3 describes how to meet the requirements for the safety of the reactor core.

COMMENTS BY REVIEWER				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
Reviewer: NRA, Japan / Date: 26 May 2014							

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Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	General	<p>Nevertheless SSR-2/1 is being revised to reflect lessons learned from the Fukushima Daiichi accident, it is very hard to identify any lessons from the accident in the area of reactor core design. Furthermore, the neutronic, thermal and mechanical design, including design of fuel assemblies and core internals do not have any relations to the application of defense in depth concept.</p> <p>Hence there is no need to revise the current edition of NS-G-1.12.</p>				X	<p>(1) The Fukushima accident confirms that accidents with core melt need to be considered in the design of NPPs and should be practically eliminated in future design ; (2) At IEM 2012, extending DBAs to include some of BDBA according to IAEA DEC's in regulations and regulatory oversight was discussed; (3) In some countries, BDBAs have already been considered in the Safety Case, in order to increase the flexibility to prevent fuel (core) damage from unexpected events; (4) Measures for the increased flexibility for saving the reactor core under DEC's are to maintain the basic safety functions available, which are also associated with the design of the reactor core; (5) Regardless Fukushima lessons, the current version of the Guide was generated in 2005 according to NS-R-1 which was superseded by SSR-2/1 in 2012. Maintaining consistency with the governing requirements SSR-2/1 is another driver for the revision.</p>

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2	2. BACKGR OUND Para.3. L.4to avoid <u>short term cliff-edge effects</u> ... What does “short term cliff-edge effects” mean?	Clarification.				The definition of “cliff-edge effect” is provided in SSR-2/1, which states “A cliff edge effect, in a nuclear power plant, is an instance of severely abnormal plant behavior caused by an abrupt transition from one plant status to another following a small deviation in a plant parameter, and thus a sudden large variation in plant conditions in response to a small variation in an input.”

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Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
Reviewer: U. S. Nuclear Regulatory Commission, United States of America / Date: 23 May 2014							
1	General	DS488 refers to the new specific safety requirements for design under SSR-2/1. We recommend adding Sections in the Table of Contents as appropriate “Design Safety Requirements.”	Completeness to address key safety requirements identified in SSR-2/1.	X			Commenter’s intention is included in the original TOC: Subsections entitled “General” under Section 2 (General Safety Considerations in Design) and Section 3 (Specific Safety Considerations in Design) are intended to make link to design safety requirements established under SSR-2/1.
2	General	Revise schedule 4 as appropriate. The schedule provided on Page 4 should be coordinated and harmonized with the schedules of the documents being developed as provided in the list on page 3.	Coordination & Harmonization	X			The comment will be reflected in the schedule.
3	Section 2, line 3	After “Specific Safety Requirements document, add: SSR-2/1 (under final review by SCCs).	Completeness &, clarification.	X (Incorporate as suggested)			