DPP Draft Safety Guide DS491 "Deterministic Safety Analysis for Nuclear Power Plants (Rev. 1)"
(Version 3 dated 19 September 2014)

COMMENTS BY REVIEWER				**RESOLUTION**			
Com-ment No.	Para/Line No.	Proposed new text	Reason	Ac-cep-ted	Accepted, but modified as follows	Rejec-ted	Reason for modifica-tion/rejection
1 UKR-2	Section 6	It is proposed to include subsections related to conservative and best-estimate DSA methods in Section 3 of the proposed guide structure.	An illustration of the revised SSG-2 contents (see Section 6 of DPP) is somewhat changed compared to the current version of SSG-2 and does not include sections related to conservative and best-estimate methods of DSA. It is proposed to include a corresponding subsection in Section 3 of the proposed guide structure, while section 4 will cover the specifics of these methods' application to DSA of normal operation, anticipated operational occurrences, DBAs and design extension conditions.		It is planned to continue describing in the adequate chapters of the revised SSG-2afety Guide different methods, modalities or options to perform DSA. According to the planned structure of the revised Safety Guide this will be developed in Chapter 4 (Approaches for deterministic safety analysis. Acceptance criteria).		
2 UKR-4	Section 5, 2nd para	It is proposed to mention NS-G-2.3 and SSG-25 IAEA guides	Since DSA is used in assessment of plant modifications, as well as in periodic safety reviews, it is proposed to mention NS-G-2.3 and SSG-25 guides in paragraph 2 of DPP Section 5 (interfaces with existing and/or planned publications).	Yes	Included in DPP's Section 5 (Interfaces with other Safety Guides to be considered): - *NS-G-2.3 „Modifications to Nuclear Power Plants", (2001), and* - *SSG-25 „Periodic Safety Review for Nuclear Power Plants", (2013)*		

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3 GER-1	Chapter 1	Document Category: "Specific Safety Guide"	Clarification regarding the new classification system for publications issued in the IAEA Safety Standards Series.	Yes			
4 GER-2	Chapter 2	2nd para, 1st sentence: "General safety requirements were developed in parallel to SSG-2 under GSR -Part 4 "Safety Assessment for Facilities and Activities" (2009)."	Editorial (unhyphenated notation).	Yes			
5 GER-3	Chapter 3	1st sentence: "~~Since~~ SSG-2 was developed to provide guidance in fulfilling the requirements of NS-R-1. Since ~~and~~ the requirements of SSR-2/1 represent a significant change with respect to those of NS-R-1, it is necessary to revise SSG-2 for making it consistent with SSR-2/1."	The present sentence construction is unnecessarily convoluted. In order to improve the readability and comprehensibility of the entire statement, we propose splitting into two separate sentences.	Yes			

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6 GER-4	Chapter 3	2nd sentence: "On the other hand, in the process of review and revision of the IAEA ~~s~~Safety ~~g~~Guides conducted mainly in 2013 to account for the feedback of experience from the Fukushima accident, several gaps were identified in the relevant IAEA safety assessment guidance and SSG-2 is one of the main ~~s~~Safety ~~g~~Guides affected by the outcome of this exercise."	In conjunction with the publications issued in the IAEA Safety Standards Series, 'Safety Guide' should be used as capitalized term consistently throughout the document.	Yes			
7 GER-5	Chapter 4	2nd para, 2nd bullet: "Deterministic safety analysis for design extension conditions needs to be included in the scope of the revised ~~s~~Safety ~~g~~Guide."	See our related comment on Chapter 3.	Yes			

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8 GER-6	Chapter 4	1st para, 2nd sentence: "The publication is intended … also to the safety re-evaluation or assessment of existing nuclear power plants taking into account applicable feedback of experience and sources of lessons learned from the Fukushima accident, for example the outcomes and conclusions arising from the NPP stress tests performed at national level."	Although the outcomes and conclusions of the NPP stress tests serve here only for illustration purposes, they are, without any doubt, one of the key sources of lessons learned from the Fukushima accident because they provide valuable insights which will be used for revising SSG-2.		"*The publication is intended … also ~~to~~ the safety re-evaluation or assessment of existing nuclear power plants taking into account applicable feedback of experience from the Tepco Fukushima Daiichi nuclear power plant accident and from other sources of lessons learned such as the conclusions arising from the stress tests performed at national level and the use of the current version of the Safety Guide by the IAEA Member States*"		
9 GER-7	Chapter 4	2nd para, 3rd bullet: "Decommissioning and dismantling need~~s~~ to be added to the applications of the deterministic safety analysis, …"	Grammar.	Yes			
10 GER-8	Chapter 4	2nd para, 5th bullet: "The revised ~~s~~Safety ~~g~~Guide needs to include changes resulting from the revisions of GSR Part 4 and SSR-2/1 …"	See our related comment on Chapter 3.	Yes			

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11 GER-9	Chapter 4	Add a new bullet: "The revised Safety Guide needs to incorporate all the issues of engineering aspects important to safety assessment and safety verification of any specific NPP design. These topics were initially covered by NS-G-1.2 "Safety Assessment and Verification for Nuclear Power Plants" (published in 2001), but are not included in the existing guidance."	This information, which is hidden in Annex I, should be moved to the main text of the DPP. One of the main conclusions drawn from the pilot review of SSG-2 was that NS-G-1.2 should not be considered to have been completely superseded by SSG-2. This was also emphasized at the meeting of the NUSSC working group (held in February 2014) which reviewed the gap analysis in advance of the 37th NUSSC meeting.				Secretariat will prepare a DPP to cover these aspects in a new Safety Guide. They apply also to Probabilistic Safety Assessment. It is planned to maintain the current scope of SSG-2 in the planned revision, focusing deterministic safety analysis specifically.

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12 GER-10	Chapter 5	2nd para: "Interfaces with other Safety Guides and Security Guides will also be considered, including the following (the list is not intended to be final or exhaustive): … • Safety Assessment for the Decommissioning of Facilities Using Radioactive Material, WS-G-5.2 (2008) • Periodic Safety Review for Nuclear Power Plants, SSG-25 (2013) • Safety Classification of Structures, Systems and Components in Nuclear Power Plants, SSG-30 (2014) • Engineering Safety Aspects of the Protection of Nuclear Power Plants against Sabotage, NSS-4 (2007) • Identification of Vital Areas at Nuclear Facilities, NSS-16 (2012)"	1. The current wording of the introductory statement suggests that the subsequent list of IAEA publications is complete. This misunderstanding should be avoided by the proposed insertion in brackets. 2. We recommend to add the Safety Guide SSG-25 as an interface document. In the context of a periodic safety review, DSA is conducted in order to provide assurance that the original assessments and conclusions are complete and remain valid. The review takes into account, inter alia, the actual plant design (including all modifications of SSCs important to safety since the last update of the SAR or the last PSR), as well as current operating modes and fuel management. 3. For completeness, please add year of publication where missing in the list.	Yes to all			

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13 GER-11	Chapter 6	"… It is planned that the document will include the following main contents (given for illustration): … 3. APPROACHES FOR DETERMINISTIC SAFETY ANALYSIS. ACCEPTANCE CRITERIA 3.1 GENERAL ASPECTS 3.2 CONSERVATIVE ANALYSIS 3.3 BEST ESTIMATE ANALYSIS 3.4 ACCEPTANCE CRITERIA …"	According to the table of contents, structuring of the revised version of SSG-2 differs from that of the current version. In the current SSG-2, Sections 4 and 5 discuss conservative methods and best estimate methods (including sensitivity and uncertainty analysis) of DSA, respectively. Both topics are missing in the table of contents for the revised SSG-2. We recommend to include two corresponding subsections in Section 3 of the revised SSG-2. The application of these methods to the different plant states (i.e. normal operation, anticipated operational occurrences, design basis accidents, and design extension conditions) will then be addressed in the subsequent Section 4.	Yes to editorial correction	It is planned to continue describing in the adequate chapters of the revised Safety Guide different methods to perform DSA. According to the planned structure of the revised Safety Guide this will be developed in Chapter 4 (Approaches for deterministic safety analysis).		

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14 ENISS-1	General	The interface with the SSG 30 SAFETY CLASSIFICATION OF STRUCTURES, SYSTEMS AND COMPONENTS IN NUCLEAR POWER PLANTS should be highlighted, particularly with reference to the classification of SSCs needed for DEC conditions: design requirements, mission time, human actuation, redundancy, etc.			A new bullet has been added to Section 4: *"Highlight the relevance of deterministic safety analysis in safety classification according to SSG-30 on "Safety Classification of Structures, Systems and Components in Nuclear Power Plants", 2014.* It is planned to further develop this interface in the revised Safety Guide in all plant states, including DEC.		
15 USA-1	Section 4, Page 2, Bullet #2	Modify bullet #2 to read: Deterministic safety analysis for design extension conditions needs to be included in the scope of the revised safety guide, as well as use of probabilistic safety analyses for design extension conditions.	Completeness to address other analytical approaches to safety analysis and relationship with deterministic approach.		SSG-2 and its planned revision focus deterministic safety analysis, and Safety Guides SSG-3 and SSG-4 cover Probabilistic Safety Analysis. Account of the comment will be taken in Chapter 7 of the planned structure of the revised Safety Guide (Interfaces of DSA with engineering aspects important to safety **and with PSA**)		

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16 USA-2	Section 4, Page 2, Bullet #3	Modify bullet #3 to read: Decommissioning and dismantling, as well as waste minimization needs to be added to the applications of the deterministic safety analysis, referring to GSR Part 6, GSR Part 5, and detailed guidance already available, including WS-G-5.2 on "Safety Assessment for Decommissioning of Facilities using Radioactive Material", 2008; and DS452, Decommissioning of Nuclear Installations. .	Need to consider waste minimization concept, recently developed GSR Parts 5 and 6, as well as DS452 guidance on "Decommissioning of Nuclear Installations."		The bullet #3 will be modified to read: *Potential role of decommissioning tasks in deterministic safety analysis will be taken into account, referring to corresponding guidance already available, including WS-G-5.2 on "Safety Assessment for Decommissioning of Facilities using Radioactive Material", 2008, and DS452 for „Decommissioning of Nuclear Facilities".* Most aspects regarding decomissioning tasks represent operational or radiological issues although other might have role in DSA, such as the consideration of external hazards.		

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17 USA-3	ANNEX 1	Adding IAEA staff presentation at the Safety Standards Committees for justification of DPP DS491 appears to be out of the norm of DPP format. We suggest that the author examine the background Section and the Justification and Objectives Sections and incorporate key issues and rationale in a brief manner and refer to the presentation at IAEA website for details, if necessary.	Avoiding redundancy and repetition and using proper format.	Yes	The presentation enclosed in the Annex 1 of DPP's version 3 was provided to facilitate understanding on the planned scope of the revised Safety Guide but it has been removed in version 4.		
18 JPN-1	2. BACKGROUND etc.	…..Tepco Fukushima daiichi NPP accident.	Use a formal plant name.	Yes	It will be named as „*Tepco Fukushima Daiichi NPP accident*" in Sections 2 and 4		

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19 JPN-2	4. OBJECTIVE AND SCOPE 4th bullet	• Regarding individual and collective doses to workers and the public, the reference to ~~NS-R-1~~WS-R-3 needs to be replaced by GSR Part 3 "Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards", 2014	Editorial.				Paragraph 3.15 (a) from the existing version of SSG-2 makes reference to paragraph 2.4 of NS-R-1. It is planned to change this reference in the revision of the Safety Guide
20 JPN-4	5. 9th bullet	Safety Classification of Structures, Systems and components in Nuclear Power Plantsm SSG-30 (2014)	Already published in 2014.	Yes			
21 JPN-5	5. The last bullet	Add 'DS490 "Seismic Design and Qualification for NPPs" as a planning publications.'	DS490 is very important for deterministic safety analysis in seismic field.		A new bullet will be added: „*Seismic design and qualification of Nuclear Power Plants, NS-G-1.6 (2003), under review as DS490*".		
22 CAN-1		CNSC supports the intent to modernize SSG-2 guide to reflect the experience as well as to harmonize the guide with other IAEA documents		n/a	n/a	n/a	n/a

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23 CAN-2	Page 2	Add, in the "Objectives and Scope", the opportunity to reflect experience on member-states with using the current version of SSG-2.	The SSG-2 was issued in 2009; the Deterministic Safety Analysis practices have evolved since that time. The guide revision offers an opportunity to reflect all key lessons learned, not only Fukushima centered.	Yes	At the end oft he first paragraph of DPP's Section 4 it will be added: „… *taking into account applicable feedback of recent regulation developments and experience from the Tepco Fukushima Daiichi nuclear power plant accident and from other sources of lessons learned, such as the conclusions arising from the stress tests performed at national level and the use of the current version of the Safety Guide by the IAEA Member States*"		

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24 CAN-3	Page 3	Suggest having a section in the proposed guide table of contents, to cover safety analysis "program", which would deal at a reasonably high level of detail with regulatory requirements, standards, quality assurance procedures, establishment and maintenance of plant data and computational tools, qualification of analysts, R&D support, documentation and periodic review and update of the safety analysis, etc.	Safety analysis should be performed in a systematic, managed manner.	Yes	A new bullet will be included in DPP's Section 4: „*The approach to establish deterministic safety analysis in the framework of the safety assessment of the NP will be included*"		
25 CAN-4	Page 3	Add "Safety margins" to the proposed section 3 "Approaches for deterministic safety analysis. Acceptance criteria".	Safety margins and their systematic application is a very important aspect of the DSA.		It is intended to provide specific guidance regarding „safety margins" as an annex to the revised Safety Guide.		
26 CAN-5	Page 3	Add to the proposed table of contents an additional section on the rules for application of the modern guidance for DSA to the NPP built to earlier standards	How to apply modern analysis rules and requirements to older plants is a difficult challenge, guidance from the IAEA would be very helpful.		The structure of the revised Safety Guide will include a subsection focusing the application of the guidance provided in the revised Safety Guide to existing NPPs.		

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27 CAN-6.	Section 5	Add Safety of Research Reactors Safety Requirements No. NS-R-4 to references in Section 5.	This will enable the document to be used by the research reactor community and help to facilitate consistency across the nuclear industry.				SSG-2 provides guidance to fulfill requirements applicable to NPPs. Deterministic safety analysis regarding design of Research Reactors is not part oft he scope of the planned revision of the Safety Guide.
28 HUNG-1	6. Overview: Main contents	…. SOURCE TERM EVALUATION FOR OPERATIONAL STATES AND ACCIDENT CONDITIONS 10 DOCUMENTATION OF DETERMINISTIC SAFETY ANALYSIS	There should be a chapter about the importance and the implementation of the documentation of the safety analyses to set some sort of basic recommendation for such documents.		A new bullet will be included in DPP's Section 4: „*Guidance regarding deterministic safety analysis documentation, review and update will be provided*."		