

Resolutions of the comments on the DPP
DS 523 – Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants

Country/ Organisation	Comment No.	Para/ Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
Germany	1	General	<i>SSG-4 needs to be revised accordingly, this should be done to some extent in parallel.</i>	Please mention this in DPP			X	IAEA SSG-4 safety guide is going to be revised in due course based on the standard IAEA procedures. Current DPP is related only to the revision by amendment of SSG-3 Safety Guide, therefore future revision of SSG-4 is not discussed in the DPP.
Belgium	1	Section 3, 1 st paragraph	“... such as multi-unit PSA, spent fuel pool PSA , passive systems reliability, ...”	Further in the text (bullet 2.), it is indicated that the scope of the Guide will be expanded to cover also the spent fuel pools	X			
ENISS	1	3 Justificatio n	In addition,[...]incorporation of the recent developments in Member States in specific areas related to PSA, such as multiunit PSA, passive systems reliability and computer based systems reliability, <u>these topics being amplified by new NPP designs and the emergence of Small Modular Reactors (SMRs).</u>	It should be emphasized that the ‘multiunit PSA’ and ‘passive system reliability’ topics are amplified by new NPP designs and/or Small Modular Reactors.			X	Considering that the safety Guide is going to be revised by amendment, the SMRs related considerations are not planned to be covered. It is considered that the development of Safety Standards (consensus documents) for SMR technology is not appropriate at this stage. Particularly, given the limited experience available. However, there are already ongoing IAEA activities on Safety Assessment for SMRs and they could be later covered in the lower level IAEA publications such as Safety Report.
ENISS	2	3 Justificatio n	Thus, the revision of the Guide will cover the following considerations: [...] <ul style="list-style-type: none"> <u>Specific focus related to methodological aspects of Level 1 PSA for new NPP designs (e.g. lack of information, HRA, considerations on impacts from hazards ...)</u> 	It should be emphasized that the SSG-3 would address PSA for new NPP designs.			X	The specifics of use of PSA for design is planned to be covered in Section 10. This includes also the limitations connected with Design Stage PSA (see §10.26 and §10.27). Revision of Section 10 is already mentioned in the DPP (see Section 3).
ENISS	3	3 Justificatio n	Recent developments of PSA in the area of reliability analysis of passive systems	It should be emphasized that the SSG-3 would address PSA for new NPP designs.			X	The specifics of use of PSA for design is planned to be covered in Section 10. However, the mentioned topics are

			and software based systems, <u>mainly for new NPP designs</u>				covered both for new and existing NPPs. Therefore, highlighting “mainly for new NPPs” is not applicable.
Japan	1.	page.2 footnote 1	¹ Currently the Guide is focused on the reactor core and does not cover spent fuel pools on the site. <u>However, while considering Level 1 PSA for low power and shutdown modes, the risk from the fuel assemblies transfered from the reactor core is also addressed.</u>	Completeness. SSG-3 paragraph 1.13 shows: '1.13. This Safety Guide is focused on the reactor core; it does not cover other sources of radioactive material on the site, e.g. the spent fuel pool. However, while considering Level 1 PSA for low power and shutdown modes (Section 9), the risk from the fuel removed from the reactor is also addressed.' The full text should be retained here.	X		
Belgium	2	Section 3, bullet 3.	“3. Considerations of hazard combinations , to supplement ...”	“combined or correlated hazards” is not a good wording (“combined” and “correlated” are not synonyms). E.g., according to DS494, there are 3 types of hazard combinations: • Initial event + consequential event(s) • Correlated events Unrelated (independent) events	X		
Germany	2	Para 3 (page 2) New point	3. Considerations of combined or correlated hazards, to supplement corresponding discussion in Sections 6 and 8 of the current Guide); <u>4. Recent developments in the area of human factors in accident conditions to supplement the paragraphs 5.96 – 5.113.</u> 4. <u>5</u> Recent developments in the area of reliability	All topics listed as significant changes in GSR part 4 (rev.1) should be found in the list of amendment aspects in para 3 Our suggestion is to add this point.	X		

			analysis of passive systems and software-based systems, to supplement the paragraphs 5.114-5.120 of the current Guide;				
Finland	1	Section 3	There are a few newer topics that could be discussed in the revised SSG-3, such as security PSA, PSA for non-reactor nuclear facilities, PSA for decommissioning phase and PSA for next generation reactors (e.g. small modular reactors).	These are topical items in several countries			<p>Considering that the safety Guide is going to be revised by amendment the above mentioned topics are not planned to be covered.</p> <p>PSA for non-reactor nuclear facilities is out of the scope of this Safety Guide, since it is devoted exclusively to the Nuclear Power Plants.</p> <p>X Applications of PSA for decommissioning, SMRs and security are still not widely used by Member States and at this stage are not considered as topics where the consensus could be achieved.</p> <p>However, there are already ongoing IAEA activities for some of these topics and they could be later covered in the lower level IAEA publications such as TECDOCs and Safety Report.</p>
Finland	2	Section 3	In the area of use and applications of PSA, safety-security interface could be included.	Safety-security interface is currently an important issue, and applications already exist.		X	<p>The information on safety-security interface is included in the DPP. It should be noted that in discussion with NSGC this document was defined as generic interface document due to the fact that PSA can reveal some plant vulnerabilities and could be a classified document. However, no specific safety-security interfaces because hazards arising from malicious acts is out of the scope of this Safety Guide.</p> <p>In addition, application of PSA for security are still not widely used by Member States and at this stage is considered as topic where the consensus could be achieved.</p>

Finland	3	Section 3	As analyses forming the base of PRA logic model, roles of different systematic failure analyses and failure tolerance analyses should be made more evident. E.g. FMEA, Diversity/CCF analyses, analysis of spurious operation, N+1/N+2 analyses, etc.	1) Transparency and traceability are nowadays more and more important quality attributes for PSAs. These analyses provide both. 2) It is proposed to address recent development in analysis of software based systems. This recent development is heavily based on systematic failure analyses of I&C, which are needed for implementing credible reliability models of I&C.		X		This comment will be taken into account during the revision of the Safety Guide. No changes to DPP (the issue of software based systems reliability is already covered by DPP).
Finland	4	Sections 4 and 6	It could be worth to comment in this plan whether there is a plan to revise SSG-4.	This guide has close relationship to SSG-4, which is dedicated to level 2 PSA.			X	IAEA SSG-4 safety guide is going to be revised in due course based on the standard IAEA procedures. Current DPP is related only to the revision by amendment of SSG-3 Safety Guide, therefore future revision of SSG-4 is not discussed in the DPP.
ENISS	4	5 Scope	This Safety Guide addresses the necessary technical features of a Level 1 PSA and applications for <u>operating</u> nuclear power plants <u>or new NPP designs</u> .	It should be emphasized that the SSG-3 would address both operating NPP and new NPP designs.		X		This Safety Guide addresses the necessary technical features of a Level 1 PSA and applications for nuclear power plants (<u>both operating and new NPPs</u>).
Belgium	3	Section 5 scope	This guide also applies to spent fuel pools even if they are independent facilities	The spent fuel pools are sometimes directly associated to the NPP and sometimes they are independent facilities, not directly associated to a NPP. Given that the safety concern and the technical aspects do not really differ for both spent fuel pool types, the guide should also address independent spent fuel pools.			X	The Guide considers spent fuel pools directly associated to the NPPs (as it is indicated by the title of the Safety Guide). Other type of storages (including dry storages) are out of the scope of this Guide.
Germany	3	Para 6 (page 3 -4)	... <u>- DS 494 - Protection against Internal Hazards in the Design of Nuclear Power Plants , Draft Safety Guide,</u>	We suggest to add this state-of-the-art Guidance on internal hazards and combined hazards, including suitable definitions of the	X			

			<u>Revision and merge of NS-G-1.7 and NS-G-1.11</u> ...	different types of combinations, also valid for external hazards				
France (comment from NSGC)	1	6	Add: “10) NSS23-G - Security of Nuclear Information”	PSA is a very sensitive document that must be protected and people having access to it may need proper clearance It should be clearly reminded in the guide in the introduction	X			
Belgium	4	Section 7 Overview	Consider to add specific chapters for the SFP (related to the NPP or as independent facility), for the interfaces between the PSA –level 1 for the reactor and the PSA level 1 for the SFP....	As current SSG-13 “focused on the reactor core; it does not cover other sources of radioactive material on the site, e.g. the spent fuel pool”, the structure should contain one (or more) specific chapter(s) for the SFP, given the new scope of the guide (including SFP). Most elements for the SFP-PSA are probably similar as these elements for the NPP, but it could be useful to gather specific topics related to SFP in a separate chapter.			X	Approaches for various PSA tasks (e.g. systems analysis, data analysis, etc.) are mostly applicable both for reactor core and spent fuel pool PSA. Therefore, it is planned to reflect the specifics of spent fuel pool PSAs by adding corresponding paragraphs in the relevant Chapters describing particular PSA task. Hence no need for adding specific Chapter on Spent Fuel Pool PSA.
Germany	4	Para 7 (page 4)	<i>The order of the Sections might be changed depending on the changes of the existing guide, particularly Section 9 may come before the hazards sections.</i>	It may be appropriate to have the Sections on power operation Level 1 PSA and low-power and shutdown PSA close together to refer to what is dealt with similarly and what is different. PSA for internal and external hazards are something separate.			X	Considering that the safety Guide is going to be revised by amendment the structure of the document will remain similar. The specificity of internal and external hazards PSA will be reflected in Section 9, when found appropriate.
Germany	5	Para 7 (page 4)	“10. LEVEL 1 PSA IN MULTI-UNIT <u>AND MULTI SOURCE CONTEXT</u> ” <i>or alternative</i> “10. LEVEL 1 PSA IN MULTI-UNIT <u>WHOLE-SITE CONTEXT</u> ”	The “multi-unit” context is not enough, spent fuel pools outside reactor units as well as other radioactive sources need also to be addressed according to the state-of-the-art.			X	The Guide considers spent fuel pools directly associated to the NPPs (as it is indicated by the title of the Safety Guide). Other type of storages (including dry storages) are out of the scope of this Guide.
Finland	5	Section 7	The title of Annex I should be revised or the annex	In the current SSG-3, the title of Annex I does not match			X	Internal hazards are provided in the Table in Annex I of current version of the SSG-3

			should be expanded to also include internal hazards	with the content, i.e., no generic list of internal hazards is provided in the Annex.				(see for example hazards M10 to M17 on pages 162-163)
Finland	6	Section 7	Clarification could be needed regarding Annex III	According to this plan, it seems that Annex III will be removed from the revision. Is this a correct interpretation?			X	Annex III is explicitly mentioned in the DPP (see Section 7, page 5)