Member State Comments on IAEA Draft Safety Guide (DS483), "Severe Accident Management Programmes for Nuclear Power Plants"

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1 Comments of Canada

DS483 – Safety Guide: Severe Accident Management Programmes for NPPs

			COMMENTS BY REVIEWER			RESOI	LUTION	
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Country	/Organiza	ation: Ca	nadian Industry Dat	e: November 2015				
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ent						modified as		modification/
No.	Ver1	Ver2				follows		rejection
1	General		Since this document defers to other IAEA documents, those requirements that are not applicable to severe accident management program only can be removed so this document is streamlined. As an example, this guide can recommend changes or additions to guide documents covering emergency management and emergency response organizations to encompass severe accident management aspects.	This document appears to be larger in breadth than covering requirements specific to severe accident management program. Significant details were afforded on many areas such as staffing and training.		This document is to provide recommendation s on development and implementation of severe accident management programme so that it encompasses all aspects to the severe accident management programme. This document		
						was modified to		
2	Claus	15	Consider revising clause 1.4 to as	The clause in its current		Rephrased in		
2	e 1 4	1.5	follows.	form is not clear. In		consistency with		
	01.4		Design extension conditions should be	addition the term "accident		relevant safety		
			used to identify additional accident	management" is defined in		standards.		

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ent			-			modified as		modification/
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				-1				
			scenarios, beyond the design basis, for	clause 1.5 and so does not		[1 5]		
			and mitigation provisions are required	1 4 as well				
2	Claus	12	Consider adding the following conteneo	The definition of covere		Donbroad in		
3	claus	1.5	to clause 1.5:	accident management is not		consistency with		
	C 1.5		The second aspect of accident	clear in the current version		relevant safety		
			management (to mitigate the	of clause 1.4		standards		
			consequences of a severe accident) is	of clause 1.4.		Standards.		
			also termed severe accident			[1,3]		
			management.					
4	Sectio	1.5	The background section should identify	The background section		Add 1.5a and		
	n 1.0		how a severe accident management	was rather "abrupt". It		1.5b to include		
	Backg		program builds on existing emergency	would have been useful to		introductory		
	round		operating procedures and emergency	include introductory		paragraphs to		
			preparedness measures to establish	paragraphs to set context		set context for		
			requirements for operation when an	for the severe accident		the severe		
			event progresses beyond the plant	management program and		accident		
			design basis.	its interfaces with other		management		
				existing programs such as		program		
				emergency preparedness				
				program.		[1.5]		
5	Sectio	1.7	Suggest adding to and restructuring	This clause seems to imply		Restructuring to		
	n 1.0,		Clause 1.6 as follows:	that the determination of		be defined		
	Claus			severe accident entry is		before and after		
	e 1.6.			based on whether or not		"significant core		
			(2) When plant conditions indicate that	tuel damage has occurred		degradation"		
			tuel damage has occurred or is	whereas fuel damage can				
			imminent (mitigatory domain of	occur well prior to a severe		[1.7]		
			accident management), priority is given	accident, which should be				

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			 to mitigating the consequences of the accident through: preventing the accident from leading to severe consequences; maintaining the integrity of fission product barriers; (3) When plant conditions indicate that significant core degradation is imminent or in progress, priority is given to mitigating the consequences of the severe accident through; preventing the uncontrolled loss of containment integrity; performing any other actions having the potential for limiting fission product releases to the environment and releases of radionuclides causing long-term off-site contamination." 	defined as "significant core degradation)				
6	Claus e 1.7	1.8	Consider revising clause 1.7 to as follows: While existing plants make the best use of preexisting instrumentation and equipment for effective implementation of severe accident management, the design of new plants specifically include consideration of dedicated systems for prevention and mitigation of severe accidents.	The first sentence in this clause states: " <i>Effective</i> <i>implementation of accident</i> <i>management is done in</i> <i>existing plants through a</i> <i>severe accident</i> <i>management programme</i> " This is not factually correct as per the definition in clause 1.4; the mitigation of		Rephrased to delete first sentence to avoid duplicated with SSR 2/1 and rephrase paragraph to be clear		

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ent		1				modified as		modification/
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				the consequences of a				
				severe accident is termed				
				severe accident				
				management . Inerefore				
				severe accident				
				ancompass prevention of a				
				severe accident				
7	Claus	1.8		The second sentence in this		Delete first		
,	e 17	1.0		clause beginning with		sentence to		
	0 1.7			"Accident management		avoid duplicated		
				encompasses plans and		with SSR 2/1		
				actions" should from a		and rephrase		
				new clause.		paragraph to be		
						clear		
8	Claus	1.8		The last sentence in clause		Rephrase		
	e 1.7			1.7 beginning with "The		paragraph to be		
				accident management		clear		
				program needs to be well				
				integrated" can be				
				deleted since this concept is				
				repeated again in the last				
				sentence of clause 1.8				
9	Sectio	1.14	Consider whether or not high-level	The scope is limited to		Rephrase to		
	n 1.0,		radioactive waste, if relocated to the	locations where fuel is		define the scope		
	Claus		environment, could pose a risk to NPP	located.		within the on-		
	es		workers, the public or the environment			site accident		
	1.10-		that should be addressed in a similar			management		
	1.12		manner under accident management as					

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ent						modified as		modification/
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			severe accidents?					
10	Sectio	Table	Suggest modification of the last	For "Verification of		Modified the		
	n 1.0,	1	sentence to state;	Effectiveness", under the		last sentence for		
	Table			"Mitigatory Domain", it is		clarification		
	1		"Positive and negative consequences of	stated that "Positive and				
			proposed actions to be considered in	negative consequences of				
			advance and monitored throughout and	proposed actions to be				
			after implementation of measures	considered in advance and				
			unless such actions are to prevent or	monitored throughout and				
			<u>mitigate a severe challenge to</u>	after implementation of				
			<u>containment integrity and immediate</u>	measures. While this is				
			<u>Action is required per Severe Accident</u>	the case when containment				
			<u>Management Guidetines (SAMG)</u> .	aballanga anaa sayara				
				challenge oritoria has been				
				satisfied pagative				
				consequences are given less				
				weight to avoid delaying				
				decisions to protect				
				containment integrity.				
11	Sectio	2.43	Suggest removing the term guidance	Item 2.35 deals with event		Section 2 is		
	n 2.0		here. Using the term guidance here	progression that is still		"General		
	Preve		and in the mitigatory domain may cause	within the plant design		Guidance for the		
	ntive		confusion. Per above comment, if the	basis. As such, the		Accident		
	domai		design basis/preventive domain is	response should be event		Management"		
	n		adequately covered in [13, 14], it is not	based prescription rather		so that it		
	Claus		necessary to specifically cover it here.	than guidance.		compasses both		
	e 2.35			-		domains.		
						However, in		

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INO.	veri	verz				Tonows		rejection
						Section 3		
						"Development		
						and		
						Implementation		
						of SAMP", all		
						aspects of the		
						domain are		
						removed.		
						[2.43]		
12	Claus	4.8	Add a new clause or add to clause 2.13	It is not only important that	Editorial	It is stated 3.118		
	e		the following;	teams be adequately staffed	modification	and 3.118a and		
	2.13/2		((TT)	and qualified, it is also		1s added to		
	.23		the emergency response organization	important that the		adequately		
			conditions dictate for effective accident	organization be scalable		qualified This		
			mitigation, and public and	(i.e. size is adjustable with		paragraph is		
			environmental protection."	addition or relief of		moved to 4.7a		
				resources) to ensure that		of Section 4		
				evolving plant conditions		"Execution of		
				can be adequately		Severe Accident		
				mitigated.		management		
						Programme		
						[2.13 moves to		
						4.7a]		
						[4.8, 2.51]		

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13	Claus e 2.14	2.13	Add a statement to clause 2.14 that appropriate transfer points or entry	It is important that procedures for design basis		Modified phrase to add "transfer		
			criteria be included in procedures involved in accident management prior	accident response include appropriate guidance and/or		points"		
			to EOPs or SAMGs.	transfer points into EOPs or SAMGs if plan conditions degrade.		[2.13]		
14	Claus e 2.16	2.15	Add another clause to state;	Agree with Clause 2.16; however, additional		Modified to add footnote for		
	footn ote		"Advance consideration should be given to modification of operational	guidance is required as some member states could		informing national practice		
			policies and/or principles and the NPP	have legal or regulatory		10.151		
			key systems beyond their design basis	using some systems beyond		[2.15]		
			such that legal flexibility can be	their originally intended				
			for severe accident prevention and mitigation."	function or design basis.				
15	Claus	2.34	Suggest the following modification:	It is stated that accident			This phrase is	
	e 2.29		"Development of accident management	should be based on best			development of	
			guidance <i>addressing design extension</i>	estimate analysis of the			accident	
			<u>conditions</u> should be based on best	physical response of the			management	
			estimate analysis of the physical	plant. While the use of best			guidance. No	
			response of the plant. <u>Development of</u>	estimate analysis is true for			change made.	
			accident management related to design	accidents that are beyond			10.040	
			basis accidents could be more	the design basis, it is not			[2.34]	
			<u>conservative subject to member state</u>	design basis accidents				
			regulatory requirements	uesign basis accidents,				

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				which also fall under the general umbrella of "accident management". A distinction should be made in the guidance.				
16	Claus e 2.35	2.43	Modify the second to last sentence from "EOPs should cover both design basis accidents and design extension conditions, but are typically limited to actions taken prior to fuel damage" To "EOPs should cover both design basis accidents and design extension conditions, but are typically limited to actions taken prior to a <u>severe accident</u> "	Fuel damage, most likely limited fuel damage but possibly wide-spread, could occur during application of EOPs. While EOPs address design basis and some beyond design basis conditions, the actions are applicable until a severe accident is declared and SAMG is invoked as opposed to fuel damage.	Modified the phrase [2.43]			
17	Claus e 2.37 and Claus e 3.52	2.46	Modify the clause to add a final sentence at the end of the clause to state: " <u>The level of the detail should be</u> <u>simple, clear and unambiguous to</u> <u>enable timely decision-making,</u> <u>particularly if containment integrity is</u> <u>severely challenged.</u> "	The guidance needs to be clear and unambiguous with respect to actions taken and the potential positive and negative consequences that are included should be simple to understand so that decisions and actions are not unnecessarily delayed.		Modified phrase for clarification [2.46]		

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				Detailing the basis, including quantitative data, is better off in supporting technical basis or background documents that are used for technical support personnel training. For example, the guidance should state that adding water to the core at a flow rate below some threshold should not be performed				
				due to potential for hydrogen proliferation, but should not go into any details as to why				
18	Claus e 2.42	2.50	Consider revising the clause to as follows: For situations that result in normal accident management capabilities being unavailable, such as loss of the command and control structure, support procedures guidelines may be developed to provide guidance on using instrumentation and equipment to cope with these conditions. The severe accident guidance should include conditions for use of these support procedures guidelines.	The terms "guidelines and procedures should not be used interchangeably. Guidelines allow for individual and subjective discretion and do not provide detailed specific instructions, whereas, procedures step-by-step instructions with little to no discretion.	Editorial modified [2.50]			

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19	Claus e 2.42	2.50	Remove Note 19 and instead refer to note 18	Note 19 in clause 2.42 refers to FLEX. FLEX was developed to address the impacts of extreme external events such as extreme weather or earthquakes. On the other hand EDMGs or alternative governance define the actions to be taken in the event normal procedures and/or command and control structures are not available following a malevolent act, for example a large fire or explosion that affects the main control room.	Remove footnote 19			
				Therefore since clause 2.42 deals with loss of command and control structure, Note 19 should refer to note 18				
20	Claus e 2.43	2.51	Modify second sentence to state "the documentation should describe and explain the rationale of the various parts of the guidelines, <i>including a full description of the benefits and detriments of various preferred and optional mitigating strategies</i> , and	Background documents should also include a full description of the benefits and detriments (positives and negatives) of the various preferred and optional mitigating	Editorial modified [2.51]			

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			should include:	strategies in the severe accident management guidance.				
21	Claus e 2.43, last senten ce	2.51, 2.52	Add a new clause after 2.43, which states the following, or something similar; "To avoid reliance on background documents during application of severe accident management guidance that could delay timely decision making, the background documents should be used to support training of the Technical Support Centre staff on severe accident phenomenology, the basis for severe accident management guidance and the benefits and detriments of various postulated mitigating actions."	While background documentation should be available for reference, if needed, it should be cautioned that the timing of an accident may not allow for exhaustive review of the background to support decision making and could significantly delay needed decisions. Instead, sufficient, clear and simple guidance needs to be included in the severe accident management guidance, and the background documents should be a fundamental input to technical support group training on severe accident phenomena and basis behind the severe		Modified to add new 2.43a for scope of application [2.51, 2.52]		
22	Claus e 2.48	2.58	Remove the word "negative" and modify the sentence to state "This should only be done after evaluating	It is stated that "This should only be done after evaluating potential	Editorial modified			

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			potential <i>negative</i> consequences of such recommended actions"	negative consequences of such recommended actions" However, recommended mitigating actions should only made after evaluating the consequences whether negative or positive based on an understanding of the likely outcomes	[2.58]			
23	Section	3	Suggest using heading "Technical Pasis	Consider use of an alternate		Editorial		
23	General Remark Identifi of Plant Vulnera , Multi Sites, Identifi of Plant Capabil	s. cation t abilities Unit cation t lities	for Beyond Design Basis Events" to envelope the aforementioned sub- headings.	title		modified		
24	Claus	3.2	Modify first sentence to state "using	First sentence identified	Editorial modified			
	c 3.2		deterministic methods and probabilistic methods."	and probabilistic methods for consideration; however, item (2) also includes deterministic methods for identification of important event sequences.	mourreu			

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25	Claus	2.23	Add another sentence to the clause that	While all events should be		Modified to add		
	e 3.3		states:	considered on the basis of		new paragraph		
				credibility of occurrence,		and move to		
			"Credible, relevant external hazards	for those external hazards		2.19d		
			should be considered with a hazard	that are deemed credible,				
			magnitudes up to and including those	the magnitude of hazard		[2.23]		
			equivalent to a mean annual frequency	should be considered at a				
			of exceedance at least one order of	mean annual frequency of				
			magnitude less than the design basis for	exceedance at least an order				
			the plant."	of magnitude less than the				
				design basis for the plant.				
26	Claus			Note 24 refers to EDMGs.	Delete EOP			
	e 3.5			EDMGs are not used in the	scope			
				preventative domain;				
				instead FLEX guidelines				
				are used in the preventative				
				domain. Revise note 24 to				
				reference FLEX instead of				
				EDMGs.				
27	Claus	2.23	Add to the last sentence of the clause;	One may not find a cliff-		Add footnote in		
	e 3.17			edge until the hazard		Para. 2.19d as a		
	Footn		"in the event magnitude <u>up to and</u>	magnitude is so extreme		national practice		
	ote 42		including an event magnitude	that the plant simply cannot				
			equivalent to a mean annual frequency	survive the event regardless		[2.23]		
			of exceedance at least one order of	of an accident management				
			magnitude less than the design basis for	program. A more practical		Delete Para.		
			the plant for that event."	approach, which is applied		3.17 due to		
				in Canada, is to consider the		redundancy with		
				potential for cliff-edge		relevant para		

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				effects up to and including a				
				nazard magnitude that is				
				frequency of exceedance				
				(AFE) that is one order of				
				magnitude less than the				
				design basis. We refer to				
				this as the Review Level				
				Condition (RLC). For				
				earthquakes, the design				
				basis was established at an				
				AFE of 1E-03/yr, and so the				
				RLC is 1E-04/yr.				
28	Claus	3.13	Add a sentence or clause which	Severe accident analysis		Modified to add		
	e 3.21		indicates that "The timing of an actual	that identified the expected		new sentence in		
			accident can vary from that expected by	timing of key severe		Para. 3.21		
			analytical results depending on actual	accident phenomena may		10 1 07		
			plant conditions and timing of real	not always be applicable or		[3.13]		
			events and decision makers should be	relevant during a real				
			cognizant of these differences. This is	accident. Severe accident				
			why a symptom-based approach to	that the applied at starts from				
			is preferred so that the decision makers	a high power plant state so				
			can respond to actual plant condition	that decay heat in the fuel is				
			and not make decisions solely based on	rather high and shortens				
			stylized analytical results "	timelines to be more				
			stynzed anarytical results.	reflective of a "worst case"				
				perspective. Severe				
				accidents that develop				

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				slowly as a result of gradual				
				equipment failures, for				
				example, will change the				
				expected timing, which				
				renders the analysis timing				
				information as somewhat				
				useless. It may be possible				
				to find a sensitivity case				
				nat closely matches the				
				being experienced but that				
				often will not be possible				
29	Claus	3.16	Consider adding the following to	If conventional lineups or		Modified to add		
	e 3.25		Clause 3.25:	hookups are contemplated		new paragraph		
			To minimize the time associated with	instructions may need to be		3.25b		
			being able to deploy equipment in novel	defined for operators to				
			ways following a severe accident, and	follow should this need		[<u>3.16]</u>		
			to ensure that these actions can be	arise. These instructions				
			taken with due regard for the safety of	should be prepared in				
			the operators involved, it may be	advance. It may also be				
			prudent to develop instructions in	prudent to pre-stage any				
			advance (called Enabling Instructions),	special tools or				
			and put in place a pre-defined set of	components.				
			steps that have been appropriately					
			<i>(e.g. pre-staging of any special tools or</i>					
			(e.g., pre-suging of any special loois of components) This provides greater					
			assurance that the actions can be					
			undertaken safely and quickly when					

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30	Under	3.14	Add a clause that includes a review of	A review of on-site plant		Rephrase to add		
	"IDE		on-site plant consumable resources that	consumables (i.e. on-site		recommendation		
	NTIFI		would be required to support an	gas sources, protective		of consumable		
	CATI		accident. A plant should ensure that at	equipment, fuel supply,		resources		
	ON		least /2 hours of consumables are	food, etc.) that will be		[2, 1, 4]		
			available at all times in the event that	needed in support of		[3.14]		
	FLA NT		off-site resources due to the initiating	scenarios should be				
	CAP		event (e.g. external hazard).	performed to ensure that at				
	ABIL			least 72 hours of capability				
	ITIES			is available at all times				
	"			(assuming that the plant is				
	Claus			isolated from off-site				
	es			resources for a maximum of				
	3.25-			72 hours)				
21	3.28.	2.21	Suggest item (5) he split into a hulloted	Not only can containment		Paphrasa to add		
51	Claus	2.21	list as follows:	hor only can containment		cases		
	3 26			compromised during		cuses		
	Item		"when the facility is in a shutdown	shutdown state, but for		[move to 2.19b]		
	(5)		state, as;	some reactor types, the				
			a. The containment barrier could	reactor core could be in a		[2.21]		
			be functionally lost and	state where boundaries				
			restoration difficult in some	guaranteeing that shutdown				
			cases;	state cannot be easily				
			b. The reactor shutdown state	compromised to add water,				
			could be guaranteed such that	and if the wrong type of				
			removal of that guarantee to	water is added, could create				

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ent						modified as		modification/
No.	Ver1	Ver2				follows		rejection
			add water is timely or difficult;	reactivity concerns.				
			The water type (heavy water versus					
			light water) injected into the reactor					
			core could cause reactivity or sub-					
			criticality concerns."					
32	Claus	3.17	Delete Clause 3.27.	To consider the capability		Rephrase 3.27 in		
	e 3.27			of plant staff to contribute		consistency with		
				to "unconventional"		requirements of		
				measures seems like an		GSR Part 7.		
				impossible task in terms of				
				preparation and training and		[3.17]		
				is not implementable.				
				There are far too many				
				combinations and				
				permutations of events that				
				could occur during a fluid				
				accident scenario that could				
				be considered				
				"unconventional" to				
				consider in a practical way.				
				In reality, if it is necessary				
				to step out of EOPs or				
				SAMG to come up with an				
				"unconventional" measure,				
				it is best to do so during the				
				accident by scaling up				
				response and consulting				
				with experts and staff who				
				have experience in that				

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No.	Ver1	Ver2				follows		rejection
				particular area, if available.				
33	Claus	3.23	Add another bullet to state:	For PHWRs containing fuel		Editorial		
	e 3.31			channels, maintaining the		modified to add		
			"Maintaining the integrity of fuel	integrity of the fuel channel		it in footnote		
			channel assemblies;"	assemblies is also an		[2,02]		
				important aspect.		[3.23]		
34	Claus	3.20		Clause 3.31 refers to note	Remove			
	e 3.31			34; however, there is no	footnote			
				note 34 in the footnotes at				
				the bottom of the page. The	[3.20]			
				first note at the bottom of				
				the page is identified as				
				should state note 34. Please				
				make the correction.				
35	Claus	3.21	Add sentence to Clause 3.32 to state;	The clause does not specify		Rephrase the		
	e 3.32			where the systematic		para.		
			"The evaluation should be document in	evaluation be documented.				
			the relevant background document."	This type of evaluation		[3.21]		
				should be documented in				
			OR	the relevant background				
			Add a clause prior to Clause 3.29 to	document.				
			state.					
			Survey,					
			"Evaluations and accident management					
			strategies developed as a result of the					
			guidance in from Clause 3.29 to Clause					

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ent No	Vor1	Vor?	•			follows		modification/
140.	VCII	V CI Z				TOHOWS		rejection
			3.41 should be documented in relevant					
			background documents."					
36	Claus	3.66	Add a clause to state:	Often, organizations may		Modified to add		
	es			have different departments		new paragraph		
	3.42-		"EOPs/SAMGs should include	that have the roles of		3.69a		
	5.09		reference to ensure adequate	the background documents		[<u>3 66]</u>		
			consideration of potential changes to	A disconnect can occur if		[3.00]		
			pertinent background documents before	the EOPs/SAMGs are				
			the EOPs/SAMGs is updated. Such	updated without having first				
			updated background documents and	considered the impact on				
			EOPs/SAMGs should be issued to the	the background documents				
			operating organization simultaneously	or if the background				
			for validation and training."	documents are not updated				
27	Classe	2.45	Mallfaulte last sendence de states	expeditiously.	M - 1:6: - 1 / -			
37	Claus	3.45	Modify the last sentence to state;	It may not always be	Modified to			
	e 3.30		"The use of redundant and diverse	and diverse instrumentation	aud pillases			
			instrumentation and signals is	and signals dependent on	[3.45]			
			recommended. Preference should be	the environmental				
			given to utilizing instrumentation	conditions that the				
			designed to withstand the	instrumentation is being				
			environmental conditions of the	subjected to, which could				
			accident even if there is no	be harsh once severe				
			redundancy."	accident conditions arise.				
				Where instrumentation is				
				the conditions of a cover-				
				accident, it may not be				
				accident, it may not be				

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No.	Ver1	Ver2				follows		rejection
				practicable or possible to install redundant and diverse equipment depending on plant design.				
38	Claus e 3.80, Item (3)	3.61	Modify item (3) to state; "An alternate means of venting the containment if rupture disks are installed that could inhibit venting when required, <u>or a strategy for</u> <u>manually blowing the rupture disks</u> <u>prior to operating the venting</u> <u>system</u> "	Either an alternate means for venting should be provided if rupture disks are inhibiting venting, or develop a strategy for manually blowing the rupture disk prior to operating the venting system. This is particularly important if there is an existing unfiltered breach path and we wish to use the filtered vent to more rapidly blow down containment pressure and reduce the total fission product inventory being released directly through the breach		Rephrase item (3) as general recommendation [move to 3.65a] [3.61]		
39	Footn ote 59	3.61	Add to Footnote 59; "and notification of off-site emergency organizations for public protection."	In addition to possible loss of water inventory a more importance consideration is the impact on the public and off-site decisions for sheltering/evacuation prior to the release.		Add to 3.80 item (3) [3.61]		

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ent						modified as		modification/
No.	Ver1	Ver2				follows		rejection
40	Claus	3 01	Consider adding the following to clause	An important concept or	Modified to			
40	e 3.86	5.71	3.86 or in a subsequent clause after	aspect to consider during an	add paragraph			
	0 5.00		clause 3.86	extended loss of AC Power	3 86b			
			ciude 5.00.	is to disconnect or load shed	5.000			
			A strategy for disconnecting non-	any non-essential battery	[3.91]			
			essential battery loads should be	loads so as to extend battery				
			prepared beforehand to extend battery	life until such time as the				
			life until such time as the battery can be	battery can be recharged or				
			recharged or alternate power source	alternate power source				
			provided.	provided.				
41	Claus	3.114	Update footnote or add statement to	Shift turnover documents		Rephrase Para.		
	e		Clause 3.113 that "shift turnover	do not need to be specific,		3.113		
	3.113		documents may be a part of routine log	individual documents				
			taking by various individuals during an	separate from logs that the		[3.114]		
			accident."	emergency response				
				organization would				
				ordinarily keep during the				
42	Claus	2 23	Per the comment on section 3 it is not	These items refer to the		Section 2 is		
72	es	3 43	necessary to get into specifics on design	plant design basis		"General		
	3.3.	5.15	basis (preventive domain) in this	plant design basis.		Guidance for the		
	3.5,		document. Items related to design basis			Accident		
	3.30,		accidents should be removed or moved			Management"		
	3.48,		into section 1 on general background.			so that it		
	3.123					compasses both		
						domains.		
						However, in		
						Section 3		
						"Development		

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ent		1				modified as		modification/
No.	Ver1	Ver2				follows		rejection
						and		
						implementation		
						of SAME, all		
						nreventive		
						domain are		
						removed.		
						Delete EOP		
						scope in 3.5,		
						3.30, 3.123		
43	Claus	3.137	Modify Clause 3.138 to state;	The technical support centre		Rephrase to		
	e			does not need to be		withstand		
	3.138		"The technical support centre should be	designed to withstand		external		
			designed to withstand external hazards.	external hazards,		hazards.		
			<u>Where an on-site centre is not designed</u>	particularly those that are				
			to withstand external hazards, then	beyond design basis.		[3.137]		
			provision for off-site back-up facilities	Rather, if it is not designed				
			shall be established for relocation of	to withstand external				
			<u>Howayar</u> cara should be taken to	hazards, then provision for back up facilities off site				
			ensure that relocation does not result in	should be provided so that				
			suspension of accident support and	the technical support staff				
			guidance to the plant operators "	can be relocated.				
44	Devel	3.33-	Consider merging Development of	It is difficult to tell whether	Editorial			
	opme	3.66	Procedures and Guidelines with	certain items in this section	modified to			
	nt of		Development of Accident Management	belong in Development of	combine titles			
	Proce		Strategies sections. The blended title	Accident Management				
	dures		could be "Development of Accident	Strategies section and vice	[3.33-3.66]			

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	and Guide lines(sectio n 3.42 to 3.69)		Management Strategies, Procedures and Guidelines".	versa. There is quite a bit of repetition between the two sections.				
45	Claus e 3.60	3.55	Suggest recommendation that complex calculations be avoided even if time is available to perform such calculations. Remove second sentence in the clause.	Complex calculations may not be appropriate in a severe accident response owing to the uncertainties in a severe accident and the likelihood that detailed diagnosis may be difficult and information could be incomplete, unreliable, or unavailable.	Editorial modified [3.55]			
46	Claus e 3.63	3.58	Suggest removing first sentence in Clause 3.63.	Identifying repair strategies are outside of SAMG scope. This is a capability that is part of plant operation. Severe accident management guidance will help to identify preferred strategies that if available will be capable of arresting event progression/ protecting containment.	Delete first bullet [3.58]			
47	Multi-	3.70	Suggest blending Clauses 3.70, 3.71,	Some of the information		Combined with		

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ent	X 7 1	V. O				modified as		modification/	
No.	Verl	Ver2				follows		rejection	
	Unit		3.72 with Clauses 3.23, 3.24 as part of	here is a repeat of Clauses		3.23 and 3.24			
	Sites,		establishing the technical basis for	3.23, 3.24.		and modified			
	Claus		beyond design basis events.			[move before			
	es					3.70a]			
	3.70,								
	3.71,					[3.70]			
40	3.72	0.54							
48	Claus	3.76	Suggest replacing references to design	The specification of plant		Rephrase to be			
	e 5.75		evaluate plant capabilities Evaluation	upgrades should not be		cieai			
			should include considerations of plant	specified a priori for severe		[3.76]			
			safety goals and targets which will	accident management.					
			drive decisions on plant modifications	Such considerations and					
			and upgrades.	final decisions should be					
				based on a risk informed					
				decision. It is sufficient to					
				have plant capabilities					
				evaluated. There are other					
				IAEA safety guides where					
				this information would be					
10	Claus	3 78	Suggest removing this Clause or	This Clause is rather		Combined with			
49	e 3.77	5.78	clarifying how this provision differs	nrescriptive Is this		3 76 and			
	03.11		from those which arrest accident	"ultimate heat sink"		modified			
			progression and protects containment	intended to be independent		in an in a			
			integrity.	of other provisions?		[3.78]			
				• •					
50	Claus	3.61	Suggest replacing "mitigate releases"	Venting strategies do not	Delete due to				
	e 3.79		with "and minimizing releases". It may	mitigate releases.	redundancy				

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ent	X 7 1	V. O				modified as		modification/
NO.	veri	ver2				TOHOWS		rejection
			be useful to provide further guidance		with 3.80			
			that this can be achieved by ranking		9move to			
			venting strategies accordingly.		3.65)			
					[<u>3.61]</u>			
51	Claus	3.1	Suggest moving Clause to	This Clause belongs in		Merge with 3.1		
	e 3.88		Development of procedures and	Development of procedures		and modified		
			guidelines section.	and guidelines.		[2 1]		
						[3.1]		
52	52 Analyses for		Suggest blending Clauses into the	Many of the Clauses in this		Modified to		
	Develop	pment	technical basis section if above	section are suited for in the		avoid		
	of Acci	dent	suggestion is adopted.	technical basis section		redundancy with		
	Program	nmes		suggested above.		technical bases		
	Tiogram	innes				Delete 3.94		
53	Claus	3.103	Consider strengthening the language in	These Clauses imply severe		Modified this		
	es 3 00	- 3 106	accident management as a symptom	accident management is an		guide to		
	3.99,	5.100	based response that is well suited for all	well-documented technical		symptom based		
	3.100,		events and event progressions. A	basis should provide		accident		
	3.102		symptom based SAMG is designed to	adequate information on the		management in		
			be useful without making any	event scenario(s) used to		terms of strategy		
			assumptions about what has caused the	evaluate severe accident		in 3.31 and		
			event to occur or what mitigating	response capabilities.		development of		
			functions may or may not be available.			SAMG in 3.102		
						combined 3.101		

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ent No	Vor1	Var2				modified as		modification/
INO.	veri	ver2				Tonows		rejection
						[3.97]		
54	Sectio	Figur	(1) Suggest adding "/Incident	A key element appears to be		Replace to add		
	n 3,	e 2	Commander" after Emergency	missing from the example		missed key		
	Figur		Director to better align with	of an on-site emergency		elements and be		
	e 2		international incident management	organization. Although the		in consistency		
			to suit (e.g. Clauses 3 124 3 127)	strictly "technical" some		Method 2003		
			etc.)	elements are key facets in				
				supporting the Technical				
			(2) Add another box under the	Support Center.				
			Emergency Director/Incident					
			Commander that includes;					
			"Command Staff					
			Liaison with off-site emergency					
			response organizations					
			Media relations					
			Logistics support for resources					
			(people and equipment)					
			Finance/procurement support for					
			logistics					
			(3) Consider whether item (2) above					
			should result in additional roles					
			description in Clause 3.119.					
55	Trans	3.125	Consider blending sections together for	Some of the information in		Rephrase to		
	fer of	-	continuity and leveraging references to	these sections		streamline this		

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ent	X X 1	X X				modified as		modification/		
No.	Verl	Ver2				follows		rejection		
	Respo	3.129	other IAEA guidance documents as a	overlap/complement the		document and				
	nsibili		way of streamlining this document.	Roles and Responsibilities		to be clearly				
	ty and			section.		interface with				
	Autho					EPR				
	rity,									
	Techn									
	Suppo									
	suppo rt									
	Centr									
	e									
	Claus									
	es									
	3.125									
	to									
56	3.129 Claus	2 1 2 0	Add a factnota or modify Clause 2 120	A definition of what		Dophroso to odd				
50	Claus	5.150	that states:	"functional" means in the		definition of				
	3.130		that states,	context of the Technical		TSC				
			"Functional means that the Technical	Support Centre (TSC)						
			Support Centre has achieved a quorum	should be provided. It is		[3.130]				
			of staff, acquired situational awareness,	not enough that simply a						
			developed a plan of mitigatory actions	quorum of staff is achieved,						
			and has communicated that plan with	but rather the TSC staff						
			control room staff. This will prevent a	must also have situational						
			potential delay in mitigatory response	awareness and nave						
			actions Refer to Clause 4.2 for	assist control room staff						
			additional detail."	which also includes a plan						

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Comm	Para/Li	ine No.	Suggested Change (if applicable)	Reason	Accepted	Accepted, but	Rejected	Reason for
ent						modified as		modification/
No.	Verl	Ver2				follows		rejection
				for mitigating actions based on severe accident management guidance if a severe accident has been declared. Control room staff must continue mitigatory actions until the				
				plan is ready and				
				communicated.				
57	Claus e 3.149	3.145	. Suggest removing this Clause. Uncertainties have to be adequately dealt with to ensure simulator fidelity.	Validation of severe accident using full scope simulator is impractical, owing to the potentially large uncertainties associated with severe accident progression. Drills and table top exercises are best suited for validating SAMG		Rephrase to be an option of using full scope simulator because it is considered as a useful method for validating SAMG modified. [3.145]		
58	Claus e 3.151	3.147	Suggest incorporation of external hazard review level conditions into technical basis if above suggestion is adopted.	Clause should be part of technical basis.		Modified 3.1 and 3.151 to avoid redundancy [3.147]		
59	Claus	3.149	Please refer to the issue Consider	Additional guidance should		Add guidance		
	e		adding additional clauses to Section 3	be provided with respect to		on testing for		

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ent						modified as		modification/		
No.	Verl	Ver2				follows		rejection		
	3.152		to provide additional guidance on testing re: manufacturer's recommendations for non-permanent equipment, the use of mock-ups during drills and exercises.	testing. For example, non- permanent equipment should be periodically tested and maintained in accordance with manufacturer's recommendations. Drills should be specified as a means for testing connections. Where it would be potentially unsafe or increase plant risk to		non-permanent equipment in 3.152a [3.149]				
				during drills, mock-ups of the connections should be considered an acceptable alternative.						
60	Accider	nt	Suggest condensing section, leveraging	Section is lengthy with		This document				
	Manage	ement	existing IAEA guidance documents on	Clauses covering generic		is to provide				
	Training	g,	training to cover generic aspects that	training aspects.		recommendation				
	Drills	es and	are not specific to severe accident.			s on development				
	DIIIIS					and				
						implementation				
						of severe				
						accident				
						management				
						programme so that it				

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Comm ent No.	Para/L: Ver1	ine No. Ver2	Suggested Change (if applicable)	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
						encompasses all aspects to the severe accident management programme. This document was modified to be streamlined.		
61	Updat ing Accid ent Mana geme nt Progr amme	3.166, 3.169, 3.170	Suggest referring impacts of new research, new accident scenarios, etc. to the technical basis if above suggestion is adopted. At the programme level, guidance should be provided on how to manage this new information when it becomes available (e.g., evaluate and revise technical basis, which may also trigger updates to other relevant SAMG documents).	Many of the Clauses noted affect the technical basis rather than the programme.		Modified phrases focus on SAM programme in 3.168, 3.171, 3.172 {3.166, 3.169, 3.170}		

2 Comments of Egypt

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Date:					1		
Comment	Para/Line	Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for
No.	No.				modified as		modification/rej
1	Dama 2 129	The huilding of the technical summart	It should be specify which		IOHOWS		ection
1	Para 5.158	antra should be designed to withstand	It should be specify which thing to withstand external		modified		
		external bazard	hazard		withstand		
		externar nazard.	nazaru.		external		
					hazard.		
2	Para 2.12	More details should be given to the			More details		
		non-permanent equipment which used			are stated in		
		to cool the reactor in severe accident			paragraph		
		conditions such as the cooling			2.32b		
		capability for non-permanent devices,					
		design of the devices, expected time at			[2.34 moves to		
		which these devices start to operate;			2.326]		
		should be studied. The document			[<u>2.40]</u>		
		should support using non-permanent			[2.40]		
		devices as an effective and independent					
		tool to withstand and overcome severe					
		accident.					
3	Para 2.21	More details for development of severe			Added more		
		accident in spent fuel pool and dry			information on		
		storage should be given.			spent fuel pool		
					stated in 1.11.		
					And the		

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Date:	-						
Comment	Para/Line	Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for
No.	No.			_	modified as	-	modification/rej
					follows		ection
					relevant		
					guidance is		
					stated in 1.10,		
					1.11. 2.21.		
					3.31, 3.86.		
					3.160. etc.		
					[1.12, 1.14,		
					2.27 3.20		
					3.89, 3.157]		
4	Para 1.10	Severe accident also occurs in research			Modified to		
		reactors, can the scope of document			add research		
	1.11	extended to cover research reactors and			reactor in 1.11		
		devote a chapter or part of this					
		document to the case of severe accident			[1,14]		
		management in research reactor.					

3 Comments of Finland

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			COMMENTS BY REVIEWER	RESOLUTION				
Reviewer: Country/Or	ganizat	ion: ST	UK/ Finland Date:	Page of 25th November 2015				
Comment No.	Para/ N Ver1	Line o. Ver2	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejectio n
1	2.22	2.20	 2.22 Accident management guidance should be an integral part of the overall emergency arrangements defined in the plant's Emergency Plan. This should include lines of responsibility and accountability for implementing response actions during execution of accident management guidance to maintain or restore safety functions throughout the duration of the accident. 	The accident management guidance is to cope with the facility. There are national differences and accident management is organized. It is important have the overall planning. However, one should not require that the Emergency preparedness plan includes the accident management guidance.				In consistency with GSR Part 7 that accident management is a part of emergency management. So accident management guidance is an integral part emergency arrangements in the emergency plan ¹ . No change made. [move to 2.19a] [2.20]
2	3.75		Remove For existing plants, providing non-	There is no reason, why this should be the prepared		Modified as an option for exist		

 $^{^{1}}$ Emergency plan covers all activities to be adhered to in the event of an emergency and describes the objectives, policy and concept of operations for the response to an emergency and of the structure, authorities and responsibilities for a systematic, co-ordinated and effective response.

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No.	N	0.				modified as follows		modification/rejectio
	Ver1	Ver2						n
			permanent on- or off-site equipment-	option instead of using		plant		
			(reasonably protected against external	permeant.				
			hazards) should be the preferred	Also the recommendation				
			option to enhance the preventive plant	does not take into account				
			capabilities.	the differences between				
				plant concepts. In some				
				cases, the time available for				
				preventive operator action				
				may be so short that timely				
				intervention is only possible				
				using permanently installed				
				equipment.				
3	3.96	3.10	65 Accident analysis which is free of	Conflict of text and		Rephrase to add		
	foot	0	deliberate pessimism regarding selected	associated footnote, text		uncertainty		
	note		acceptance criteria and uses a best	says:		analysis		
			estimate code with uncertainty analysis.	Analysis is not				
				conservative but of best		[3.100]		
				estimate analysis, and does				
				not in itself create margins.				
				Best estimate with				
				uncertainty analysis				
				estimates margins by				
				statistical means.				
4 Comments of France

DS483 – Safety Guide: Severe Accident Management Programmes for NPPs

		COMMENTS BY REVIEWER	< colored and set of the set of t		RESOLU	JTION	
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ment	No.				modified as		modification/rej
No.					follows		ection
	General	At several occasions, "fuel damage" or	Numerous criteria related to fuel		Modified		
		"damage to the fuel" is used, but without	damage are used in fuel design		correctly using		
		clear explanation of the meaning. It	and safety analyses: these fuel		terms of "fuel		
		would useful to include, as a footnote or	criteria may differ from country to		damage" for		
		otherwise, some information to ease a	country. Some are used to		DBA and Tuel		
		fuel demage is defined with regard to the	during normal operation. Some		for DEC		
		safety criteria used for deterministic	are used to maintain cladding		And add		
		safety assessment of design basis	integrity during anticipated		definition in		
		accidents, depending on the DBA	transients, thus avoiding fission		Footnotes		
		category and type : cladding	product release. Some are used to				
		temperature, fuel pellet temperature,	limit fuel damage and ensure core				
		DNBR When these criteria are	coolability during design basis				
		exceeded, fuel damage is supposed to	accidents, and some are used to				
		occur	limit the public risk from low				
			probability severe accidents.				
			(Nuclear Safety 2012 Second				
			Edition Nuclear Fuel Safety				
			Criteria Technical Review				
			OECD/NEA)				
			Proposal:				
			For example, fuel damage is				
			defined with regard to the safety				

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ment	No.				modified as		modification/rej
No.					follows		ection
			criteria used in fuel design and				
			safety analyses to limit fuel				
			damage and ensure core				
			coolability during design basis				
			accidents. These fuel criteria may				
			differ from country to country.				
			Some are used to minimise				
			cladding degradation during				
			normal operation. Some are used				
			to maintain cladding integrity				
			during anticipated transients, thus				
			avoiding fission product release.				
	General	Review text to ensure "fuel damage" is			Modified		
	General	used only for DBA and DEC without			correctly using		
		core-melt and "fuel degradation" is only			terms of "fuel		
		used for severe accidents			damage" for		
		used for severe decidents.			DBA and "fuel		
					degradation"		
					for DEC.		
					And add		
					definition in		
					Footnotes		
1.	1.2	Old : Design extension conditions	The word "more severe" is not	Deleted 1.2			
		comprise accident conditions more	sufficient. See consistency with	not to be			
		severe than a design basis accident.	requirement 20 - SSR-2/1 - §2.1	redundancy			
			for DS483	with SSR 2/1			
		Proposed : Design extension conditions					
		comprise accident conditions more					
		severe than a design basis accident or					

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ment	No					modified as		modification/rej
No.						follows		ection
			that involve additional failures.					
2.	1.4	1.4	Old - The design extension conditions	The sentence "named severe		Rephrasing in		
			should be used to identify the additional	accident management (the term		consistency		
			accident scenarios to be addressed in the	"accident management " includes		with relevant		
			planning of practicable provisions for	the management of a severe		requirement 19		
			the prevention of such accidents or the	accident)" is unclear and		in SSR-2/2		
			mitigation of their consequences if they	redundant with §1.5.				
			do occur - named severe accident			[moved 1.3]		
			management (the term "accident					
			management " includes the management			[1.4]		
			of a severe accident)					
			Proposed : The design extension					
			conditions should be used to identify the					
			additional accident scenarios to be					
			addressed in the planning of practicable					
			provisions for the prevention of such					
			accidents or the mitigation of their					
			consequences if they do occur-named-					
			severe accident management (the term-					
			"accident management " includes the					
			management of a severe accident)					
3.	1.5	1.2	Old - Accident management is the	According to SSR-2/1 and		Modified "a		
			taking of a set of actions during the	WENRA, safe state is not used for		safe state" in		
			evolution of accident conditions with the	severe accident		case of		
			objective of: preventing progression into			accident		
			a severe accident, mitigating the			management		
			consequences of a severe accident, and			as "returning		
			achieving a long-term safe stable state			the plant to a		
			[6].			safe state after		

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Com	Para/Line	Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for			
ment	No.				modified as		modification/rej			
No.					follows		ection			
		Proposed : Accident management is the			anticipated					
		taking of a set of actions during the			operational					
		evolution of accident conditions with the			occurrences					
		objective of: preventing progression into			and accident					
		a severe accident, mitigating the			conditions" in					
		consequences of a severe accident, and			consistency					
		achieving a long-term safe stable state,			with SSR 2/1					
		where fundamental safety functions are			and WENAR					
		ensured								
					[moved 1.3]					
					F (- D)					
					[1.2]					
4.	Table I	Old - Use of all systems still available,	Use of systems shall not create	Modified to						
	Use of	also beyond their design limits, with	additional risks.	add "and						
	equipment	preference given to safety features for		appropriate"						
		design extension conditions, if available		for						
		Proposed : Use of all systems still		clarification						
		available, also beyond their design								
		limits, with preference given to safety								
		features for design extension conditions,								
5	Table 1	It available and appropriate	The wording "in a limited ward"		Modified to					
э.	Varification	Old : The effectiveness of the accident	and the state of t		woullied to					
	vernication	nianagement measures can be vermed <u>m</u>	suggests that a low quality		aud as					
	offootivnoor	a minuted way Droposed : The offectiveness of the	analysis is expected from the		neasonable" for					
	enecuviess	accident management measures is	The DS482 sofety guide should		clarification					
		accident management measures is	ancourage the utilities to		ciamication					
		vermen as rai as reasonably possible	implement robust provisions for							
			source agaident and to verify their							
			severe accident and to verify their							
			enectiveness.							

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ment	Ν	0.				modified as		modification/rej
No.						follows		ection
6.	2.11	2.11	Old :			Modified to		
			Multiple strategies should be developed	Delete "Maintaining the integrity		add		
			to achieve the accident management	of reactor vessel to prevent melt				
			objectives, which include:	through;"				
			• Preventing or delaying the	This is not one of the accident				
			occurrence of severe fuel	management high level objectives				
			damage;	: this is a mean (design				
			• Terminating the progress of fuel	dependent), among others, to				
			damage once it has started;	achieve one of the other listed				
			• Maintaining the integrity of	objectives.				
			reactor vessel to prevent melt					
			through;	The DS483 safety guide should				
			• Maintaining the integrity of the	<u>insist on :</u>				
			containment and preventing					
			containment by-pass;	• Prevention of fuel damage as				
			 Minimizing releases of 	first highest priority and				
			radioactive material from the	maintaining or restoring the				
			core or at other locations of fuel;	integrity of the containment				
			• Achieving a long term safe	as second priority, before				
			stable state.	reaching the set point to				
				mitigatory actions,				
			Proposed	• Maintaining the integrity of				
			• Preventing or delaying the	the containment as highest				
			occurrence of severe fuel	priority after reaching the				
			damage;	setpoint to the mitigatory				
			• Maintaining the integrity of the	domain.				
			containment and preventing	(see remark on 3.34).				
			containment by-pass;					
			 Minimizing releases of 	Accoding to SSR-2/1 and				
			radioactive material from the	WENRA, safe state is not used for				

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No.					follows		ection
		core or at other locations of fuel;	severe accident				
		• Terminating the progress of fuel					
		damage once it has started;					
		 Maintaining the integrity of 					
		reactor vessel to prevent melt-					
		through ;					
		• Achieving a long term safe					
		stable state, where fundamental					
		safety functions are ensured.					
_	2 2 2 2 5				D 1		
7.	2.30 2.36	Index 15 :			Rephrase para.		
			The DS483 shall not encourage		10.00		
		Equipment may not be necessary, in the	the utility to do nothing in the		[2.36]		
		strict sense of the word, but can be very	mitigatory domain : it is always				
		useful for implementing the accident	possible to consider that the				
		management programme. For example,	severe accident is low but today it				
		passive autocatalytic recombiners	must be <u>postulated</u> .				
		remove uncertainties on hydrogen burns	After Eulrichime no doubt for				
		DDODOSAL . DELETE	that				
		TROI OSAL. DELETE	tilat				
8	2 29h 2 35	Old : none					Modified to add
0.	2.270 2.33	Pronosed · a new section in main					phrases
		principles					ringood
		2.29b The accident management					[add 2.29a]
		guidance should be efficient for time-					[
		constraint actions (example RCS					[2.35]
		depressurization, containment isolation).					
9.	2.36 2.45	Old In the mitigatory domain, large	SAMG shall propose clear actions		Modified and		
		uncertainties may exist both in the plant	to the operators as far as possible		add phrases		

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ment	No.				modified as		modification/rej
No.					follows		ection
		status, availability of the systems and in	to maintain the NPP on a "safe				
		the timing and outcome of actions.	path" (limited risk of containment		[2.45]		
		Consequently, the guidance for the	failure). If all actions need a				
		mitigatory domain should not be	specific analysis during the				
		prescriptive in nature but rather should	accident then the efficiency of				
		include a range of potential mitigatory	SAMG can obviously not be				
		actions and should allow for additional	demonstrated.				
		evaluation and alternative actions. Such					
		guidance is usually called severe	The DS483 safety guide shall				
		accident management guidelines	encourage utilities to demonstrate				
		(SAMGs).	the efficiency of the SAM				
			strategies.				
		Proposed In the mitigatory domain,					
		large uncertainties may exist both in the					
		plant status, availability of the systems					
		and in the timing and outcome of					
		actions. Consequently, the guidance for					
		the mitigatory domain should					
		distinguish between what can be					
		prescriptive (because there is no doubt					
		on benefits, for example RCS					
		depressurization on PWR) and what					
		cannot be prescriptive in nature. In this					
		case, the guidance should include a					
		range of potential mitigatory actions and					
		should allow for additional evaluation					
		and alternative actions. Such guidance is					
		usually called severe accident					
		management guidelines (SAMGs).					
10.	2.37 2.46	Old : The guidance should contain a	SAMG must be efficient for time-	Editorial			

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ment	No.				modified as		modification/rej
No.					follows		ection
		description of both the positive and	constraint actions.	modified			
		negative potential consequences of					
		proposed actions, including quantitative	See proposed new §2.29b above.	[2.46]			
		data, where available and relevant, and					
		should contain sufficient information for					
		the plant staff to reach an adequate					
		decision on the actions to take during the					
		evolution of the accident.					
		Proposed : The guidance should contain					
		a description of both the positive and					
		negative potential consequences of					
		proposed actions, including quantitative					
		data, where available and relevant, and					
		should contain sufficient information for					
		the plant staff to reach timely an					
		adequate decision on the actions to take					
		during the evolution of the accident.					
11.	3.1 3.1	A topic (6) can be added :	SAM strategies have to be		Modified to		
		(6) Verification and optimization of	updated periodically.		establish new		
		severe accident management strategies			phrases in		
		(for example with PSA upgrade,	para 3.32 be included "a		consistency		
		research activities, periodic safety	comprehensive evaluation of "		with following		
		review, external review, benchmark,			structure		
		design extension conditions).					
12.	3.2 3.2	Old :		Editorial			
		(5) Consideration of plant design		modified for			
		capabilities, including the possible use		clarification			
		of;					
		• some systems beyond their		[3.2]			
		originally intended function and					

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ment	No.				modified as		modification/rej
No.					follows		ection
		anticipated operational states;					
		Dropogod					
		(5) Consideration of plant design					
		(5) Consideration of plant design					
		of					
		· some systems beyond their					
		originally intended function and					
		anticipated operational states					
		provided that it can be shown					
		that the use of the systems may					
		not make the situation worse.					
13.	3.31 3.20	Old		Modified			
		In the mitigatory domain, strategies	Delete "Maintaining the integrity	phrases and			
		should be developed with the objectives	of reactor vessel;"	bullets			
		of:	This is not one of the accident	correctly			
		• Terminating the progress of fuel	management high level objectives				
		degradation;	: this is a mean (depending on	[3.20]			
		• Maintaining the integrity of the	NPP design), among others, to				
		reactor vessel;	achieve one of the other listed				
		• Preventing re-criticality;	objectives.				
		• Maintaining the integrity of the					
		containment or any other					
		confinement of fuel and	According to SSR-2/1 and				
		preventing containment bypass;	WENRA, safe state is not used for				
		• Minimizing off-site releases of	severe accident				
		radioactive material;					
		• Achieving a long term safe					
		stable state.					

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Com	Para/	Line	Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for
ment	N	0.				modified as		modification/rej
No.						follows		ection
			Proposed					
			In the mitigatory domain, strategies					
			should be developed with the objectives					
			of:					
			Maintaining the integrity of the					
			containment or any other					
			continement of fuel and					
			Minimizing off site releases of					
			radioactive material:					
			· Terminating the progress of fuel					
			degradation:					
			• Maintaining the integrity of the					
			reactor vessel;					
			· Preventing re-criticality;					
			• Achieving a long term safe					
			stable state, where fundamental					
			safety functions are ensured.					
14.	3.34	3.23	Old :			Editorial		
			Strategies should be prioritized taking	Warning :		modified for		
			into account plant status and the existing	Priority is to cool core into vessel		clarification		
			and anticipated challenges. The basis for	for preventive domain.				
			the selection of priorities in accident	Priority for mitigatory action		[3.23]		
			management strategies should be-	(core degradation soon to start or				
			documented. When prioritizing, special	started) is to keep the containment				
			attention should be paid to the	integrity.				
			IOHOWING: Timefromes and second to a f	The DC402 sefets 11 1.1				
				The DS483 safety guide should be				
			challenges to the barriers against	cnecked by IAEA to be sure that				

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ment	No	Э.				modified as		modification/rej
No.						follows		ection
			releases of radioactive material;	there is no doubt about the				
				objectives of the mitigatory				
			Proposal :	actions.				
			Strategies should be prioritized taking					
			into account plant status and the existing					
			and anticipated challenges. The basis for					
			the selection of priorities in accident					
			management strategies should be:					
			 prevention of fuel damage as first 					
			highest priority and maintaining or					
			restoring the integrity of the					
			containment as second priority,					
			before reaching the set point to					
			mitigatory actions,					
			• maintaining the integrity of the					
			containment as highest priority, after					
			reaching the set point to the					
			mitigatory domain.					
15.	3.75	3.78	Old	Many NPPs have implemented		Rephrase as an		
			Equipment upgrades aimed at enhancing	additional fix equipment to		option for exist		
			preventive features of the plant should	reinforce the prevention of		plant		
			be considered as tasks with high priority.	accident. It is too much				
			55 For existing plants, providing non-	controversial (and not consistent		[3.78]		
			permanent on or off-site equipment	with French regulation) to				
			(reasonably protected against external	promote systematically				
			hazards) should be the preferred option	reinforcement by non permanent				
			to enhance the preventive plant	on or off-site equipment for that				
			capabilities	purpose. One obvious reason is				

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ment	No.				modified as		modification/rej
No.					follows		ection
			the time needed to implement				
		Proposal	these mobile equipment. The				
		Equipment upgrades (fix or mobile)	reinforcement choice between fix				
		aimed at enhancing preventive features	and mobile equipment (or both)				
		of the plant should be considered as	has be plant specific.				
		tasks with high priority.					
16.	3.79	Old	Venting without filtration could		Delete		
		When containment venting is possible,	not be consistent with the				
		the accident management programme	objective of mitigation of		Redundancy		
		should provide guidance on its use to	consequences (it may be		with 3.65a.		
		prevent uncontrolled loss of containment	worthwhile to check that DS483		3.85a,		
		integrity and to mitigate releases of	never presents venting without				
		radionuclides causing long-term off-site	filtration as an option for accident				
		contamination	management.)				
		Proposal					
		When containment venting is possible, it					
		should be filtered. The accident					
		management programme should provide					
		guidance on its use to prevent					
		uncontrolled loss of containment					
		integrity and to mitigate releases of					
		radionuclides causing long-term off-site					
		contamination					
17.	3.80 3.	61 Old			Move to 3.65a		
		When containment venting is	Venting without filtration could		and rephrase to		
		contemplated or directed in the	not be consistent with the		delete item (3)		
		accident management strategies, it is	objective of mitigation of		alternative		
		recommended to consider the	consequences (it may be		means		

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No.	1				follows		ection
		followings in the guidance:	worthwhile to check that DS483				
		(1) Situations when all AC and DC	never presents venting without		[<u>3.61]</u>		
		power is lost and the instrument	filtration as an option for accident				
		air system is not available;	management.)				
		(2) Situations involving high					
		radiation areas and high					
		temperatures in areas where					
		vent valves are located (if local					
		access is required);					
		(3) An alternate means of venting					
		the containment if rupture disks					
		are installed that could inhibit					
		venting when required. The-					
		preferred option should be to-					
		vent using a pathway that is					
		likely to provide some reduction					
		of fission product release;					
		(4) The potential negative					
		consequences of containment					
		venting should be assessed					
		during the decision making					
		process.					
		r					
		Proposal					
		(1) Provide a filtration with the					
		containment venting system.					
		(2) Provide an alternate means of					
		venting (with filtration) the					
		containment if rupture disks are					
		installed.					

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ment	No	Э.					modified as		modification/rej	
No.							follows		ection	
			(3)	Situations when all AC and DC						
				power is lost and the instrument						
				air system is not available;						
			(4)	Situations involving high						
				radiation areas and high						
				temperatures in areas where						
				vent valves are located (if local						
				access is required);						
				The potential negative						
				consequences of containment						
				venting should be assessed						
				during the decision making						
				process.						
18	3.96	3 100	Old :	Utilization of suitable analysis	The second part of the sentence		Rephrase			
10.	5.70	5.100	metho	ods with appropriate safety or risk	can be understood as " the SAM		paragraph			
			metri	cs should be used to aid in decision	may not be efficient"		Paragraph			
			makir	ng regarding plant upgrades.	The DS483 safety guide should					
			Consi	deration should be given to the	require efficiency of the		[3.100]			
			fact th	hat analysis in the field of severe	provisions and an appropriate		-			
			accide	ent management is usually not	demonstration.					
			conse	rvative but of best estimate						
			analy	sis65and does not in itself create-	More generally, it may be					
			margi	ns.	worthwhile to ensure that					
					thatDS483t does not open					
					possibility to build non efficient					
			Prop	osed : Utilization of suitable	strategies. For example, wording					
			analy	sis methods with appropriate safety	like "SAM strategies shall be as					
			or risl	k metrics should be used to aid in	efficient as possible" should be					
			decisi	on making regarding plant	preferred to "no margin, high					

			COMMENTS BY REVIEWE	R		RESOL	UTION	
Countr	ry/Organ	ization:	FRANCE	Date: 31/12/2015				
pages	1		Γ	1				
Com	Para/	/Line	Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for
ment	N	0.				modified as		modification/rej
No.			1			follows		ection
			upgrades.	uncertainties," concepts.				
19.	4.9	4.10	Old A mechanism should be put in place to assign priorities in case of a conflict between planned releases and the off- site readiness. In principle, priority should be assigned to the actions that prevent major damage to the fission product barrier still intact Proposed A mechanism should be put in place to assign priorities in case of a conflict between planned releases and the off- site readiness.	During core melting, priority is to maintain the containment integrity and avoid containment by passes. This should be in the "main principle" chapter of section2.		Modified to maintain the containment integrity and avoid containment by passes during accident conditions [4.10]		
20.	ANN ANN EX 1 EX 1-1		Old In France, SAM guidelines applicable to the Électricité de France S.A. (EDF; Electricity of France) nuclear fleet (d'un Guide d'Intervention en situation d'Accident Grave (GIAG) in French) have been developed under the form of both flowcharts and text. There are two parameters that are used for entry in GIAG, one characterizing very high core exit temperature, the other high containment activity Either criterion can be used for entering		Modified			

		COMMENTS BY REVIEWER	ER RESOLUTION				
Countr	y/Organization:	FRANCE	Date: 31/12/2015				
pages							
Com	Para/Line	Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for
ment	No.				modified as		modification/rej
No.					follows		ection
		GIAG or subsequent performance of a					
		whole set of immediate actions by main					
		control room (MCR) personnel					
		Proposal In England SAM avidalings applicable to					
		the Électricité de France S. A. (EDE:					
		Electricity of France) nuclear fleet (d'un					
		Guide d'Intervention en situation					
		d'Accident Grave (GIAG) in French)					
		have been developed under the form of					
		both flowcharts and text. There are two					
		parameters that are used for entry in					
		GIAG, one characterizing very high core					
		exit temperature, the other high					
		containment activity					
		Either criterion can be used for entering					
		GIAG and subsequent performance of a					
		whole set of immediate actions by main					
		control room (MCR) personnel					
		ADD after that : SAM guidelines (OSSA) have also been					
		developed for the EDE European					
		Pressurized Reactor (FPR) The main					
		parameter used for entry in GIAG is the					
		core exit temperature					
	ANN	Old		Modified			

		COMMENTS BY REVIEWER	ξ		RESOL	UTION	
Countr	y/Organization	FRANCE	Date: 31/12/2015				
pages							-
Com Para/Line		Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for
ment	No.				modified as		modification/rej
No.					follows		ection
	EX 1	GIAG doesn't contemplate any pre- defined long-term provision nor incorporate exit criteria to long-term measures. Long-term provisions are to be decided by Emergency Response teams Proposal 20					

5 Comments of Germany

DS483 - Safety Guide: Severe Accident Management Programmes for NPPs

	Reviewer Safety (B	:: Federa SMUB) (al Minis with cor	COMMENTS BY REVIEWER try for the Environment, Nature Conserva nments of RSK and GRS)	tion, Building and Nuclear Page 1 of 14		RESOLU	JTION	
	Country/0	Organiza	tion: Ge	ermany	Date: 2015-11-23				
Rele	Comme	Para	/Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	N	0.				but modified		modificatio
e		Ver1	Ver2				as follows		n/rejection
1	1	1.1		Design basis accidents are defined as accident conditions against which a facility is designed according to established design criteria, and for which the damage to the fuel, and the release of radioactive material, are kept within acceptable limits [1, 5]. Design extension conditions comprise accident conditions more severe than a design basis accident. Design extension conditions may or may not -involve nuclear fuel degradation either in the core or at other locations where fuel is stored; conditions involving nuclear fuel degradation are termed severe accidents	See text below the table. It applies to all proposed modifications no. 1 to 5 and 9. It is a general point related to the application of the safety guide for existing and/or new reactors.	Deleted due to redundancy with SSR 2/1 and rephrase Deleted 1.2 due to redundancy with SSR 2/1			
1	3	1.3	1.2	Consideration of design extension conditions in the design of new nuclear- power plants ⁴ or in the enhancement of the design of existing nuclear power-		Rephrasing in consistency with		1	
				plants is an essential component of the defence-in-depth approach used in nuclear safety [2- <u>4</u> 5]. The probability of		relevant requirement 19 in SSR-			

				COMMENTS BY REVIEWER			RESOLU	JTION	
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	Safety (B	MUB) (with co	mments of RSK and GRS)	Page 1 of 14				
	Country/C	Drganiza	tion: Ge	ermany	Date: 2015-11-23				
Rele	Comme	Para	/Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	N	ю.				but modified		modificatio
e		Ver1	Ver2				as follows		n/rejection
				occurrence of a design extension		2/2			
				condition is very low, but it may lead to					
				significant consequences resulting from		[1.2]			
				degradation of the nuclear fuel.					
	4	1.4	1.3	The design extension conditions should be			Rephrasing		
				used to identify the additional accident			in		
				scenarios to be addressed in the planning			consistency		
				of practicable provisions for the			with relevant		
				prevention of such accidents or the			requirement		
				mitigation of their consequences if they			in SSR-2/1		
				do occur - named severe accident					
				management (the term-"accident			[1.3]		
				management " what includes the					
				management of a severe accidents.) [5].					
1	5	1.7	1.4	Effective implementation of accident			Rephrase to		
				management is done in existing plants			be clear		
				through a severe accident management					
				programme (hereinafter referred to as			[1.4]		
				"accident management programmes")					
				while already the design of new nuclear					
				power plants explicitly includes the					
				consideration of severe accident scenarios					
				by dedicated systems and provides					
				strategies for their management. Accident					
				management encompasses plans and					
				actions undertaken to ensure that the plant					
				and the personnel with responsibilities for					
				accident management are adequately					

			COMMENTS BY REVIEWER			RESOLU	JTION	
	Reviewer	: Federal Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear				
	Safety (B	MUB) (with con	mments of RSK and GRS)	Page 1 of 14				
	Country/C	Drganization: Ge	ermany	Date: 2015-11-23				
Rele vanc e	Comme nt No.	Para/LineNo.Ver1Ver2	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modificatio n/rejection
	6	1.8 1.0	prepared to take effective on-site actions to prevent or mitigate the consequences of a severe accident. The accident management programme needs to be well integrated with the emergency preparedness and response programme in terms of human resources, equipment, strategy and procedures.	In the shown perce 1.9 there		Pophrasa to		
	6	1.8 1.9 first sente nce	The accident management programme needs to consider all modes of operation, all possible conditions, including combinations of events that could cause failure of fuel cooling and ultimately significant radiological releases to the environment.	In the shown para. 1.8 there is obviously an inconsistency in the requirements compared to the new para 2.1 taken from IAEA SSR 2/1 for new reactors as well as between the paras.1.8, 2.1, 2.8, 3.3 and 3.17 itself with regard to the conditions and events and the inclusion of external events which should be considered in the AM programme development respectively in individual parts of it. A proposal for a corrected text should be derived based on a discussion between		Rephrase to be clear		

				COMMENTS BY REVIEWER		RESOLUTION			
	Reviewer	: Federa	al Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear				
	Safety (B	SMUB) (with cor	nments of RSK and GRS)	Page 1 of 14				
	Country/0	Organiza	tion: Ge	ermany	Date: 2015-11-23				
Rele	Comme	Para	/Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	N	0.				but modified		modificatio
e		Ver1	Ver2				as follows		n/rejection
					members of the countries.				
					The proposal should be in				
					line with latest requirements				
					with this regard after				
					Fukushima.				
1	7	1.8	1.9	An accident management programme	Foot note 1 from §1.3 should	Delete			
		Befo		should consider special requirements for	be moved into §1.8.	footnote			
		re		multi-unit sites. An accident management					
		seco		programme requires that plants establish		<mark>[1.9]</mark>			
		nd		the necessary infrastructure to effectively					
		sente		prevent or mitigate severe accident					
		nce		conditions, mitigate fuel damage, and					
				stabilize the units if fuel damage does					
				occur. This infrastructure should include					
				equipment and supporting procedures					
				necessary to respond to events that may					
				affect multiple units on the same site and					
				last for extended periods, and personnel					
				having adequate skills for using such					
				equipment and implementing supporting					
1	0	1.0	1 1 1	procedures. This Safety Cuide presents	The NG C 2 15 here here	E ditarial			
1	0	1.9	1.11	This Safety Guide presents	developed on the basis of the	Editorial modified to			
				and implementation of an accident	IAEA Sofoty Standards	nounieu lo			
				management programme for masting the	Sories No. NS D 1 This	references			
				requirements for accident management	should be refer-enced	rererences			
				that are established in relevant $IAEA$	The new SSR- $2/1$ and $2/2$	<mark>[1 11]</mark>			
				Safety Requirements for design in-	have been developed for				

				COMMENTS BY REVIEWER		RESOLUTION			
	Reviewer	: Federa	al Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear				
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	Country/	Organiza	tion: Ge	ermany	Date: 2015-11-23				
Rele	Comme	Para	/Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	N	0.	-			but modified		modificatio
e		Verl	Ver2				as follows		n/rejection
				Sections 2 and Section 5 of Ref [5], com- missioning and operation in Sections 3 and 5 of Ref. [6], safety assessment in- Section 4 in Ref. [7] and emergency preparedness and response in Sections 2 and 3 of Ref. [8]. It is also applicable for further enhancements of nuclear safety by means of reasonably practicable safety	new NPPs. The requirements mentioned in the section 2 and 5 are fare be-yond the requirements of the older IAEA documents.				
1	9	1.10	1.10	improvements. This Safety Guide provides recommendations for the development and implementation of an accident management programme during all modes of operation for the reactor, the spent fuel pool and or any other location of fuel-to- prevent and/or to mitigate the- consequences of severe accidents. ³ ³ More details can be found in Reference- [8].	Last words of sentence can be deleted as Accident management is defined above in §1.5 etc. Reference [8] mentioned in the foot note is not related to the topic.	Rephrase to delete redundant sentence with Para. 1.5 and rephrase [1.10]			
	10	1.11	1.11	Although the recommendations of this Safety Guide have been developed primarily for use for both existing <u>power</u> <u>plants</u> and new water cooled reactors, they are anticipated to be valid to some extent for <u>new plants</u> and other types of nuclear reactors and nuclear fuel cycle facilities (including spent fuel storage), too.	See text below the table. It applies to all proposed modifications no. 1 to 5 and 9. It is a general point related to the application of the safety guide for existing and/or new reactors.		Rephrase to be clear in consistency with SSR 2/1 and 2/2 [1.11]		

				COMMENTS BY REVIEWER			RESOLU	JTION	
	Reviewer	: Federa	l Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear				
	Safety (B	MUB) (with co	mments of RSK and GRS)	Page 1 of 14				
	Country/C	Drganiza	tion: Ge	ermany	Date: 2015-11-23		1		
Rele	Comme	Para	Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	N	0.	-			but modified		modificatio
e		Verl	Ver2				as follows		n/rejection
1	11	2.1		Requirement 20 in Reference [5]- establishes the following requirements on design extension conditions for which- accident management programmes are to- be developed.: "A set of design extension conditions shall be derived on the basis of engineering judgement, deterministic assessments and probabilistic assessments for the purpose of further improving the safety of the nuclear power plant by enhancing the plant's capabilities to withstand, without unacceptable radiological consequences, accidents that are either more severe than de-sign basis accidents or that involve additional failures. These design extension	As discussed below the table separately, AMP cannot be considered in the design of current NPPs, as the design is already given and the plant operating. If Req. 20 of SSR-2/1 must be applied here, it should be change to be applicable for existing NPPs. In the shown para. 2.1 there is obviously an inconsistency in the requirements compared to the new para 2.1 taken from IAEA SSR 2/1 for new		Deleted to avoid the design aspect and redundancy with SSR 2/1		
				conditions shall be used to identify the additional accident scenarios to be addressed in the design <u>of accident</u> management programs and to plan	reactors as well as between the paras.1.8, 2.1, 2.8, 3.3 and 3.17 itself with regard to the conditions and events				
				practicable provisions for the prevention of such accidents or mitigation of their consequences if they do occur ² . [5]	and the inclusion of external events which should be considered in the AM programme development respectively in individual parts of it.				

			COMMENTS BY REVIEWER		RESOLUTION			
	Reviewer	: Federal Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear				
	Safety (B	MUB) (with con	mments of RSK and GRS)	Page 1 of 14				
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Rele	Comme	Para/Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	No.				but modified		modificatio
e		Ver1 Ver2				as follows		n/rejection
				A proposal for a corrected				
				text should be derived based				
				on a discussion between				
				members of the countries.				
				The proposal should be in				
				line with latest requirements				
				with this regard after				
1	10		2.2 Demonstration Defensions [5] estation	Fukushima.	D 1 1			
1	12	2.2 2.2	2.2 Paragraph 2.10 in Kelerence [5] estab-	This requirement taken form $SSP_2/1$ does not fit to the	Replaced			
			dent management in the design of nuclear	SSR-2/1 does not nit to the	with para.			
			nower plants which is applicable for the	spacified for AMD for	2.5 but keep			
			development of accident management	specified for AMF for	in of ignation			
			pro grammos in gonoral:	main mitigating massura are	aomnlianco			
			"A coident management mMeasures are	main mitigating measure are	with revised			
			-According management missicastics are	"provision of safety features	SSP 2/1			
			radiological consequences of an accident	and safety systems" is	55K 2/1			
			would be mitigated. Such measures	requested what cannot be	[move to			
			include the provision of safety features	done typically in an existing	2.3]			
			and safety systems, the establishment of	plant anymore.	2.0]			
			accident management procedures and	P	[2.2]			
			guidelines by the operating organisation	Modifications should be				
			and, possibly, the establishment of off-site	discussed after the general				
			intervention measures by the appropriate	decision is taken, whether				
			authorities, supported as necessary by the	NS-G-2.15 is still deemed				
			operating organisation, to mitigate	to be valid/developed for				
			exposures if an accident has occurred".	both reactors, existing and				
			_	new ones, or even not, as				

				COMMENTS BY REVIEWER		RESOLUTION			
	Reviewer	: Federa	al Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear				
	Safety (B	MUB) (with cor	nments of RSK and GRS)	Page 1 of 14				
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Rele	Comme	Para	/Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	N	о.	^			but modified	C	modificatio
e		Ver1	Ver2				as follows		n/rejection
					again pro-posed.				
1	13	2.3	2.1	Requirement 19 on accident management	This requirement taken from	Rephrase			
				in the operation of nuclear power plants in	SSR- $2/2$ is OK, but there is	but keep			
				Reference [6] establishes:	no need to mention the	original			
				"The operating organization shall	Requirement 19 explicitly.	format			
				establish, and shall periodically review					
				and as necessary revise an accident		[move to			
				management programme-[6] ²² .		2.2]			
						[2.1]			
2	14	2.4	2.3	Paragraph 5.6 in Reference [7] requires	There is no need to mention	Rephrase			
				that tThe results of the safety assessment	the Paragraph 5.6 in	para.			
				shall be used as an input for on-site and	Reference [7] explicitly.				
				off-site emergency response and accident		[2.3]			
				management [7].					
2	15	2.5	2.4	Paragraph 5.2 in Reference [8] dealing	There is no need to mention	Rephrase			
				with minimization of consequences of any	the Paragraph 5.2 in	para in			
				nuclear or radiological emergency on-	Reference [8] explicitly.	consistency			
				peoples' health, property and the		with GSR			
				environment requires that tThe transition		Part 7			
				from normal operation to operations under					
				emergency conditions on the site shall be		[2.4]			
				specified and shall be effectively made					
				without jeopardizing safety [8].					
1	16	2.6	2.6	"Requirement 46 in Reference [9]	There is no need to mention	Rephrase			
		Foot		requires that aAccident management as	the Requirement 46 in	para in			
		note		part of overall emergency preparedness	Reference [9] explicitly.	consistency			

			COMMENTS BY REVIEWER		RESOLUTION			
	Reviewer	: Federal Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear				
	Safety (B	MUB) (with con	mments of RSK and GRS)	Page 1 of 14				
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Rele	Comme	Para/Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	No.				but modified		modificatio
e		Ver1 Ver2				as follows		n/rejection
			and response shall should address the		with GSR			
			transition from existing exposure-	The statement in Para 2.6 is	Part 7			
			situations to emergency exposure	not correct. The relevant				
			situations ^o to existing exposure situations	exposure situations are	[2.6]			
			[9]. which arises as a result of an accident	referred to in a wrong order.				
			or any other unexpected event, in order to-	Furthermore, 'should' need				
			avoid or to reduce adverse consequences."	to be replaced by 'shall'.				
				Compare with the wording				
			Please modify the text of footnote No. 5	in the preceding Paras 2.4				
			as follows:	and 2.5: "Requirement				
			"Defined as situations <u>of exposure</u> that	requires that shall be"				
			arise as a result of an accident, may occur	The same wording has to be				
			during the operation of a planned	used in Para 2.6 as well,				
			situation, or from a malicious act, or from	since a requirement taken				
			any other unexpected situation event, and	from GSR Part 3 is referred				
			require urgent prompt action in order to	to.				
			avoid or to reduce <u>adverse</u> undesirable					
			consequences. For the purpose of	The definition of the term				
			protection, the International Commission	'emergency exposure				
			on Radiological Protection recommended	situation' in footnote No. 5				
			that reference levels for emergency	is not consistent with the one				
			exposure situations should be set in the	provided in GSR Part 3 (see				
			band of 20–100 mSv effective dose (acute	Para 1.20 (b) and section on				
			or per year) [22]."	definitions therein). It is				
				strongly recommended to				
			Please add the ICRP Publication 103 to	use this definition. This also				
			the list of references:	means that the last part of				
			"[22] INTERNATIONAL	Para 2.6, which is closely				

	COMMENTS BY REVIEWER						RESOLUTION			
	Reviewer	: Federa	l Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear					
	Safety (B	MUB) (with con	mments of RSK and GRS)	Page 1 of 14					
	Country/C	Drganiza	tion: Ge	ermany	Date: 2015-11-23					
Rele	Comme	Para	/Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for	
vanc	nt No.	N	0.	-			but modified	-	modificatio	
e		Ver1	Ver2				as follows		n/rejection	
									-	
				COMMISSION ON RADIOLOGICAL	related to the definition of					
				PROTECTION, The 2007	the term 'emergency					
				Recommendations of the International	exposure situation', should					
				Commission on Radiological Protection,	be moved into the footnote.					
				ICRP Publication 103, Elsevier, Oxford						
				and New York (2007)."	Recommendations on					
					reference levels for					
					emergency exposure					
					situations are provided in					
					ICRP Publication 103 and					
					are reproduced in GSR Part					
					7 (see Para $4.28(2)$ therein).					
					For completion a reference					
					to one of these publications					
					should be added in footnote					
					No 5					
1	17	2.7	2.6	An accident management programme	The content of foot note 6.					
_				should be developed and implemented for-	which is clearly a					
				all plants including new plants equipped	requirement for new NPPs is					
				with dedicated systems for prevention and	not related to the text. It					
				mitigation of severe accidents.	cannot be applied for					
				irrespective of the core damage frequency	existing plants.					
				and fission product release frequency. ⁶	The important information is					
				- The possibility of certain conditions	that an AMP should be					
				occurring is considered to have been	developed irrespective of the					
				practically eliminated if it is physically	core damage frequency and					
				impossible for the conditions to occur or	fission product release					
				if the conditions can be considered with a	frequency. It has nothing to					

				COMMENTS BY REVIEWER			RESOLU	JTION	
	Reviewer	: Federa	l Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear				
	Safety (B	BMUB) (*	with cor	nments of RSK and GRS)	Page 1 of 14				
	Country/	Organiza	tion: Ge	ermany	Date: 2015-11-23		1	I	- T
Rele	Comme	Para/	Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	N	0.				but modified		modificatio
e		Ver1	Ver2				as follows		n/rejection
				high level of confidence to be extremely	do with existing or new				
	1.0			unlikely to arise.	plant.				
1	18	2.8	2.7	The accident management programme	In the shown para. 2.8 there	Rephrase			
				should address all modes of operation and	is obviously an	and delete			
				external hazards relevant for the site	inconsistency in the	Tootnote			
				dependencies between events. It should	the new pere 2.1 taken from	[2,7]			
				also consider external bazards that could	LAEA SSP $2/1$ for new				
				result in significant damage to the	reactors as well as between				
				infrastructure on-site or off-site	the paras 1.8 2.1 2.8 3.3				
				initiastracture on site of on site.	and 3.17 itself with regard to				
					the conditions and events				
					and the inclusion of external				
					events which should be				
					considered in the AM				
					programme development				
					respectively in individual				
					<u>parts of it</u> .				
					A proposal for a corrected				
					text should be derived based				
					on a discussion between				
					members of the countries.				
					The proposal should be in				
					line with latest requirements				
					with this regard after				
	1.0				Fukushima.				
3	19	2.17	2.17	"Interface with waste management or	More appropriate wording.	Editorial			

				COMMENTS BY REVIEWER		RESOLUTION			
	Reviewer	: Federal	l Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear				
	Safety (B	MUB) (v	with cor	nments of RSK and GRS)	Page 1 of 14				
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Rele	Comme	Para/l	Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	No).				but modified		modificatio
e		Ver1	Ver2				as follows		n/rejection
				remediation of contaminated areas during		modified			
				accidents should be considered in an					
				appropriate manner. <u>Radioactive</u> <u>W</u> aste		[2.17]			
				should be processed in such a way that					
				provisions are made to mitigate the					
				consequences if <u>of</u> accidents <u>if they do</u>					
	20		2.40			DI			
1	20	Foot	2.40	Examples of justification and use of	Please note that the original	Delete			
		note		portable (non-permanent) equipment can	sentence construction of	Tootnote			
		INO.		be found in United States of America.	footnote No. 18 is wrong;	[manual to			
		18 10		<u>I ms includes the</u> developed extensive	our proposal for				
		2.34		which were developed reflect	the left	2.520]			
				requirements imposed after the events of	the left.	[<u>2</u> 40]			
				11 September 2001 and the Elevible	In the context of this	[2.40]			
				Coping Strategies (ELEX) which were a	footnote it should be				
				strategy developed following the	explained in more detail				
				Fukushima Dajichi accident "	what the so-called B 5 b				
				i ukusiinin Dunein ueeluent.	requirements of the US				
					Nuclear Regulatory				
					Commission stand for.				
1	21	3.3	2.23	The preventive accident management	In the shown paras. 3.3 and		Rephrase and		
				should address the full spectrum of	3.17 there is obviously an		move to		
				events, including relevant external	inconsistency in the		2.19d		
				hazards. All events should be considered	requirements compared to				
				on the basis of credibility of occurrence,	the new para 2.1 taken from		[2.23]		
				and possible complications during their	IAEA SSR 2/1 for new				
				evolution that could be caused by	reactors as well as between				

			COMMENTS BY REVIEWER		RESOLUTION			
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	Safety (E	BMUB) (with con	mments of RSK and GRS)	Page 1 of 14				
	Country/	Organization: G	ermany	Date: 2015-11-23				
Rele	Comme	Para/Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	No.				but modified		modificatio
e		Ver1 Ver2				as follows		n/rejection
				the manual 0 0 1 0 0 2 2				
			errors	and 3 17 itself with regard to 10^{-10}				
1	22	3.17	A safety assessment should be performed	the conditions and events		Delete due to		
-		5.17	to identify and consider all credible	and the inclusion of external		redundancy		
			challenges resulting from individual	events which should be				
			events or combinations of events that	considered in the AM				
			could cause failure of barriers against	programme development				
			release of fission products.	respectively in individual				
				parts of it.				
				A menocol for a compated				
				A proposal for a corrected				
				on a discussion between				
				members of the countries				
				The proposal should be in				
				line with latest requirements				
				with this regard after				
				Fukushima.				
3	23	3.30	"In the preventive domain, strategies	More appropriate wording.	Delete due			
			should be developed to preserve critical		to			
			safety functions that are important to		redundancy			
			prevent fuel damage or prevent					
			radioactivity release of radioactive					
			material. These include achieving and					
			maintaining sub-criticality, fuel cooling,					
			integrity "					
2	24	3.31 3.20	Last sentence:	Wrong reference is referred		Rephrase the		

	COMMENTS BY REVIEWER						RESOLUTION			
	Reviewer	: Federal	Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear					
	Safety (B	MUB) (w	vith cor	nments of RSK and GRS)	Page 1 of 14					
	Country/C	Organizati	ion: Ge	rmany	Date: 2015-11-23			-		
Rele	Comme	Para/L	Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for	
vanc	nt No.	No					but modified		modificatio	
e		Ver1	Ver2				as follows		n/rejection	
				"Strategies may be derived from 'candidate high level actions' examples	to in this paragraph. A list of 'candidate high		sentence			
				of which are given in Appendix II of Ref $[12]$ [15]."	level actions' is provided in Appendix II of the Safety Reports Series No. 32.		[3.20]			
3	25	Foot	3.10	"Potential radiological consequence	Grammar.	Delete				
		note	2	analysis of reactor accidents in terms of		footnote				
		No.		doses."						
		66 to				[3.102]				
		3.98								
2	26	3.94		"Besides activities performed as part of	Clarification.	Delete to				
				assessment of plant vulnerabilities and		avoid				
				capabilities, the following guidance		redundancy				
				provided in Paragraphs 3.95–3.109 should be done: followed."						
2	27	3.97	3.10	"Address all All significant sources of	Safety Guides like DS483	Editorial				
			1	radioactive material in the plant, in	should provide	modified				
				particular the reactor core and spent fuel	recommendations and					
				pools and occurrence of accidents in all	guidance (i.e. 'should'	[<u>3.101]</u>				
				relevant normal operational and shutdown	statements) rather than					
				states including shutdown states with	instructions.					
				open reactor or open containment barriers						
	20	2.00	2.10	should be addressed."		D 11/2 1 1				
2	28	5.98	3.10	-Address all All phenomena (thermal-	sarety Guides like DS483	Editorial				
			2	nyuraulic, structural) important for	should provide	moannea				
				assessment of chanenges to integrity of	midance (i.e. 'should'	[3 102]				
				materials as well as for source term	statements) rather than	[3.102]				
				materials as well as for source term	statements) rather than	1		1		

				COMMENTS BY REVIEWER		RESOLUTION			
	Reviewer	: Federa	al Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear				
	Safety (B	BMUB) (with con	mments of RSK and GRS)	Page 1 of 14				
	Country/	Organiza	tion: Ge	ermany	Date: 2015-11-23				
Rele	Comme	Para	/Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	N	0.				but modified		modificatio
e		Ver1	Ver2				as follows		n/rejection
				assessment should be addressed.66 "	instructions.				
2	29	3.99	3.10	"Address a A sufficiently broad set of	Safety Guides like DS483	Modified to			
			3	accident scenarios adequately covering	should provide	make clear			
				potential evolutions of initiating events	recommendations and				
				into design extension conditions and a	guidance (i.e. 'should'	[<u>3.103]</u>			
				comprehensive set of plant damage states	statements) rather than				
				should be addressed."	instructions.				
2	30	3.10	3.1	"Perform the <u>The</u> selection of accident	Safety Guides like DS483		Merge with		
		0		sequences should be performed in the	should provide		3.1 and		
				following steps :"	recommendations and		rephrased		
					guidance (i.e. should		10 11		
					statements) rather than		[3.1]		
2	21	2 10	2 10	"Drouido sufficient Sufficient input for	Instructions.	Modified			
2	51	5.10	5.10	development of procedures and guidelines	should provide	for aditorial			
		2	0	should be provided in particular."	recommendations and	correction			
				snould be provided, in particular.	guidance (i.e. 'should'	concetion			
					statements) rather than	[<u>3 106]</u>			
					instructions.				
2	32	3.10	3.10	"Provide sufficient Sufficient information	Safety Guides like DS483	Modified			
		3	7	regarding environmental conditions for	should provide	for editorial			
				assessment of the survivability of the	recommendations and	correction			
				plant equipment including instrumentation	guidance (i.e. 'should'				
				needed in accident management, as well	statements) rather than	[3.107]			
				as for the assessment of the working	instructions.				
				conditions/habitability of working places					
				for personnel involved in the execution of					
				the accident management actions should					

				COMMENTS BY REVIEWER		RESOLUTION			
	Reviewer	: Federa	al Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear				
	Safety (B	MUB) (with cor	nments of RSK and GRS)	Page 1 of 14				
	Country/C	Organiza	tion: Ge	ermany	Date: 2015-11-23				
Rele	Comme	Para	/Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	N	0.				but modified		modificatio
e		Ver1	Ver2				as follows		n/rejection
	22	2.10	2.10	be provided."	Sefere Carille 11- DS402		Countrie of		
2	33	3.10	3.10	Use generic Generic plant analysis	Safety Guides like DS483		Combined		
		4	4	snould be used, if available, after	should provide		with 3.100a		
				assessment of its applicability for the	recommendations and		[<u>2 104]</u>		
				specific.	guidance (i.e. should		[3.104]		
					instructions				
2	3/	3.10	3.10	"Take into account the The following	Safety Guides like DS/83	Modified			
2	54	5.10	8	aspects of accident scenarios that would	should provide	for editorial			
		5	0	lead to core damage and subsequent	recommendations and	correction			
				potential challenge to fission products	guidance (i.e. 'should'	concetion			
				barriers should be taken into account ⁶⁸ "	statements) rather than	[<u>3 108]</u>			
				Suffers <u>mould be taken into decount</u> ,	instructions.	[3.100]			
2	35	3.10	3.10	"Use best <u>Best</u> estimate computer codes,	Safety Guides like DS483				
		6	0	assumptions and data regarding initial and	should provide		Combine		
				boundary plant conditions with	recommendations and		with 3.96		
				appropriate consideration of uncertainties	guidance (i.e. 'should'				
				⁶⁹ in the determination of the timing and	statements) rather than		[<u>3.100]</u>		
				severity of the phenomena should be	instructions.				
				used."					
2	36	3.10	3.10	"Use computer Computer codes that have	Safety Guides like DS483	Modified			
		7	9	the capability of modelling severe	should provide	for editorial			
				accident phenomena with reasonable	recommendations and	correction			
				accuracy in prediction of key physical	guidance (i.e. 'should'	12 1001			
				pnenomena and modes and timing of	statements) rather than	[3.109]			
				railure of barriers and validated to the	instructions.				
				extent as far as reasonably practicable					
				should be used."					

	COMMENTS BY REVIEWER RESOLUTION								
	Reviewer	: Federa	al Minis	try for the Environment, Nature Conserva	tion, Building and Nuclear				
	Safety (B	MUB) (with con	nments of RSK and GRS)	Page 1 of 14				
	Country/C	Organiza	tion: Ge	ermany	Date: 2015-11-23				
Rele	Comme	Para	/Line	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
vanc	nt No.	N	0.				but modified		modificatio
e		Ver1	Ver2				as follows		n/rejection
2	37	3.10	3.11	"Evaluate and interpret all All_code results	Safety Guides like DS483		Modified to		
		8	0	should be evaluated and interpreted with	should provide		make clear		
				due consideration given to code	recommendations and		[<u>3.110]</u>		
				limitations and associated uncertainties. ⁷⁰ "	guidance (i.e. 'should'				
					statements) rather than				
					instructions.				
2	38	3.10		"Perform activities <u>Activities</u> in	Safety Guides like DS483	Delete due			
		9		accordance with basic rules for safety	should provide	to avoiding			
				analysis should be performed as specified	recommendations and	redundancy			
				in the relevant IAEA Safety Requirement	guidance (i.e. 'should'				
				(see Ref. [7])."	statements) rather than				
					instructions.				
2	39	3.14		"The responsible authority should decide	Ensuring consistency with	Delete due			
		2		when to transition from <u>an</u> emergency	the terminology used in the	to avoiding			
				exposure situation to an existing exposure	Safety Requirements GSR	redundancy			
				situation, taking into account the need to	Part 3 and GSR Part 7, both				
				protect individuals existing living in long-	of which referring to the				
				term contaminated areas after a nuclear	term 'nuclear or radiological				
				accident or a radiation radiological	emergency' (see section on				
2	40			emergency."	definitions therein).				
3	40	Anne	Anne	In addition, to keep abreast with the	Editorial.	Modified			
		X II	X 1-1	international community, the development	Sentence appears twice.				
				or SAMUGS has been started in 2010, and was fully completed and of 2014. In					
				addition to keep abreast with the					
				international community the The					
				development of SAMCs has been started					
				in 2010 and full completion is					
		1		in 2010 and run completion is		1			1

	. .			COMMENTS BY REVIEWER		RESOLUTION				
	Reviewer	: Federal N	Minis	try for the Environment, Nature Conservat	tion, Building and Nuclear					
	Safety (BMUB) (with comments of RSK and GRS)Page 1 of 14									
	Country/C	Organizatio	on: Ge	rmany	Date: 2015-11-23					
Rele	Comme	Para/Li	ine	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for	
vanc	nt No.	No.		_			but modified	-	modificatio	
e		Ver1 V	Ver2				as follows		n/rejection	
				contemplated for the end of 2014.						

6 Comments of India

DS483 – Safety Guide: Severe Accident Management Programmes for NPPs

			COMMENTS BY REVIEWER			RESC	RESOLUTION				
Reviewer:	AERB			Page of							
Country/Or	rganizatio	on: India		Date:							
Comment	Para/Li	ine No.	Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for			
No.	X7 1	XV Q	-			modified as		modification/rej			
	Verl	Ver2				follows		ection			
1	2/1.6(1.7	Modify as 'preventing the	Once fuel is damaged, 1st		Delete					
	2) [1st		uncontrolled loss of RPV and	priority would be to prevent							
	bullet]		Containment integrity'	loss of RPV (apart from		<mark>[1.7]</mark>					
				Containment).							
2	4/Tabl	Table	Add at the end of text under last	Mitigatory domain of AM		Modified to					
	e-l,	1	column, and emergency response	involves integration of		add					
	[A1m]		measures for dose .reduction'.	SAM provisions &		"emergency					
				Emergency response		response					
				measures (in line with 1st		measures					
				para on Page / & Sec. 4.8							
				on Page.55 of the IAEA document)							
3	21/3.2	2.21	Shift this item under 'Identification	Non-functional containment			It is considered				
	6(5)		of Plant Vulnerabilities',	barrier in reactor shutdown			that failure of				
				state is a plant vulnerability			containment				
				issue (and not the plant			isolation				
				robustness/capability			during reactor				
				feature).			shutdown for				
							plant overhaul.				
							No change				
							made				
							[moved to				
			COMMENTS BY REVIEWER			RESC	LUTION				
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Reviewer:	AERB			Page of							
Country/Or	rganizatio	on: India		Date:							
Comment	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for			
No.	XX 1	XX 0	4			modified as		modification/rej			
	Verl	Ver2				follows		ection			
							2.19b]				
							,0]				
							[2.21]				
4	39/Fig	Figure	Dotted line of interface showing	This on-site emergency		Editorial					
	.2	2	communication of TSC with MCR,	response organisation will		modified to					
			Radiological Centre (RC) &	have to communicate with		add practices					
			should be indicated	these external agencies (see							
			External interfaces (e.g. with HO	course of severe accident							
			Vendor, Regulatory Body, off-site	management process.							
			emergency response organisation)	Proper lines of							
			should be shown.	communication are to be							
				indicated for clarity.							
5	46/3.1	3.153	Shift last part of the sentence at the	Sequentially, first the		Modified the					
	56		start of para.	evaluators assess the SA		phrases					
				situation and give		10 100					
				recommendation to decision		[3.153]					
				and accordingly instruct							
				implementer to execute							
6	47/3.1	3.159	Add at the end, 'However, any	Training/Refresher Training		Modified to					
	61		major change in the guidance	schedule may not reflect		add the					
			requiring urgent familiarization	this aspect immediately.		training					
			of all the stakeholders (i.e.			programme					
			^valuators, decision makers &			including					
			impleracnters), should be			changes of the					
			communicated to them through			guidance					
			special interaction,			[<u>3 159]</u>					
			impleracnters), should be communicated to them through special interaction',			changes of the guidance [3.159]					

Note: The bold text with red font in yellow .background is the proposed new text

7 Comments of Japan

DS483 – Safety Guide: Severe Accident Management Programmes for NPPs

			COMMENTS BY REVIEW	ER:		RESOL	UTION	
Revie	ewer:		Page of					
Coun	try/Organiza	ation: Japaı	n/NRA Date:					I
No.	Para/L	Line No.	- Proposed new text	Basson	Accepted	Accepted, but	Rejected	Reason for modification/r
	Ver1	Ver2	- Floposed new text	Keason		follows		ejection
1.	1.6 Table-1	Table 1	Mitigatory domain: Use of equipment :	Adding description to make this table comprehensive.		Modified to rephrase to		
	Table-1		Use of all systems still available, also beyond their design limits, with preference given to safety features for design extension conditions, if available	At least one system should be effective to deal with postulated events from the viewpoint of capacity and robustness.		be clear		
			Ensure availability at least one system for each fundamental safety function					
2.	1.6 Table-	1Table 1	Preventive domain: Verification of effectiveness:	Wording.		Editorial modified to		
			The effectiveness of the accident management measures <u>can should</u> be verified with reasonable accuracy	 Adding description to make this table comprehensive. Not only assessment for positive and negative consequences, but 		be clear		
			Mitigatory domain: Verification	also positive measure which will be enough to cover the negative				

			COMMENTS BY REVIEW	ER:		RESO	LUTION	
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Countr	y/Organiz	ation: Japan	/NRA Date:					
No.	Para/l Ver1	Line No. Ver2	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/r ejection
			of effectiveness:	risk should be considered.				
			The effectiveness of the accident management measures <u>can should</u> be verified in a limited way					
			Positive and negative consequences of proposed actions to be considered in advance and monitored throughout and after implementation of measures					
			In particular, additional or further positive consequence compared to negative risk should be taken into account as well.					
3.	2.37	2.47	Please consider of adding Add the following sentence to the end of this paragraph. In particular, additional or further positive consequence compared to negative risk should be taken into account as well.	Same reason for the comment number 2.				Already stated in 2.37. No change made
								[2.47]

			COMMENTS BY REVIEW	ER:		RESO	LUTION	
Revie	wer:		Page of					
Count	ry/Organiza	tion: Japai	n/NRA Date:					
No.	Para/L Ver1	ine No. Ver2	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/r ejection
4.	3.1. (1), (2)	3.1	 (1) <u>Any M-m</u>echanisms that can <u>could</u> challenge critical <u>fundamental</u> safety functions or boundaries to fission product release should be identified; (2) Plant vulnerabilities should be identified, considering the challenging mechanisms <u>including concurrent loss of</u> <u>fundamental safety functions</u> without scenario; 	 Clarification. Current description of (1) and (2) are taken for granted among the Member States. However, it needs to be strengthened furthermore in light of the Fukushima-Daiichi NPP accident, as proposed. Wording. "Critical safety functions" should be replaced to "fundamental safety functions" as stated in SSR-2/1. 		Rephrase 3.1		
5.	3.6 Footnot e 26	3.4	Please consider adding Japanese practice in the footnote 26. hydrogen burns <u>(in PCV and in secondary containment e.g.</u> reactor building annulus in PWR and reactor building in BWR) 	The lessons learnt from the Fukushima-Daiichi NPPs accident should be taken into account for the better understanding of readers.		Delete footnote and rephrase para. [3.4]		
6.	3.28/1st	3.18	•Working in high temperature <u>or</u>	Pressure area is not practical.	examples	Editorial		

			COMMENTS BY REVIEW	ER:		RESO	LUTION	
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Count	ry/Organiza	tion: Japar	NRA Date:					
No.	Para/L Ver1	ine No. Ver2	- Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/r ejection
	bullet		steamed condition /pressure areas;			modified to add [3.18]		
7.	3.40./2	3.31	including leakage caused by failed containment <u>failure</u> should be preferred considered in the long <u>term</u> .	In short time, minimising the accumulation of large amounts of contaminated water is not high priority.	Editorial modified [3.31]			
8.	3.52	2.22, 3.34, 3.120	Please consider adding the following sentence at the end of the paragraph. <u>The important criterion for</u> <u>decision-making such as the</u> <u>containment venting or sea water</u> <u>injection into the reactor core</u> <u>should be incorporated into the</u> <u>procedure and guideline.</u>	The lessons learnt from the Fukushima-Daiichi NPPs accident should be taken into account for the better understanding of readers.		Similar sentence given examples are given in [2.22, 3.34, 3.120]		
9.	3.60./2	3.55	computations (e.g. using steam table) and/or pre-calculated graphs.	Adding example for the better understanding of readers.		Add in the main text		
10.	3.76/last bullet	3.80	• Prevention and mitigation of	Amendment to make the description of this bullet comprehensive.		Modified to add		

			COMMENTS BY REVIEW	ER:		RESO	LUTION	
Review	wer:		Page of					
Count	ry/Organiza	tion: Japar	NRA Date:					
No.	Para/L	Line No. Proposed new text		Proposed new text Reason		Accepted, but modified as	Rejected	Reason for modification/r
	Ver1	Ver2	Troposed new text	Teason		follows		ejeedon
			dominant challenges, such as			examples		
			for;			[3.76a]		
			- containment overpressure, -					
			and underpressure and					
			<u>temperature;</u>			<mark>[2 90]</mark>		
			- Ingri-pressure core-ment			[3.60]		
			- reactor vessel melt-through					
			- basemat melt-through by					
			molten corium;					
			- hydrogen explosion and					
			steam explosion.					
11.	3.81	3.61	Add following sentence in	The lessons learnt from the		Rephrase		
			footnote as the MS practice.	Fukushima-Daiichi NPPs accident		item (3)		
			_	should be taken into account for the		[move to		
			• <u>e.g. alternate measures of</u>	better understanding of readers.		3.65a]		
			actuation system for valves for					
			driven pumps) and			[3.61]		
			depressurization system (SRV)					
			should be prepared.					
12.	3.82	3.81	Add following factors at the last	The lessons learnt from the Fukushima		Modified to		
			of the paragraph.	Daini NPPs accidents should be taken		add case		
			The case of extensive	into account for the better understanding of readers.		[3.81]		

			COMMENTS BY REVIEW	ER:		RESOL	LUTION	
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Count	y/Organiza	ation: Japar	NRA Date:					
No.	Para/L	line No.	- Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/r
	Ver1	Ver2	Tioposed new text	Reason		follows		ejection
			infrastructure damage caused by catastrophic natural hazards should be taken into account					
13.	3.84	3.84	Add following sentence at the last of the paragraph. <u>The non-permanent equipment</u> <u>should be diversely located so as</u> <u>to avoid common cause failures</u> <u>due to extreme external hazards</u> <u>such as earthquake and tsunami.</u>	The lessons learnt from the Fukushima-Daiichi NPPs accident should be taken into account for the better understanding of readers.		Add new para 3.84a [3.84]		
14.	3.86	3.90	Add following sentence at the last of the paragraph. <u>In addition, in case that the plant</u> <u>parameters derived from</u> <u>instrumentation are not credible,</u> <u>the presumption means should</u> <u>also be considered in the SAMG .</u>	The lessons learnt from the Fukushima-Daiichi NPPs accident should be taken into account for the better understanding of readers.		Modified to add 3.86a [3.90]		
15.	3.116	3.38	Add following sentence after the para. 3.116. <u>Command and control chain</u> <u>should be developed and alternate</u> <u>communication means between</u>	The lessons learnt from the Fukushima-Daiichi NPPs accident should be taken into account for the better understanding of readers.		Redundanc y with 9th bullet in 3.44b		

			COMMENTS BY REVIEW	ER:		RESO	LUTION	
Review	wer:		Page of					
Count	ry/Organiza	tion: Japan	/NRA Date:					
No.	Para/L	ine No.	Dur u o o o d'u o ou tout	Desser	Accepted	Accepted, but	Rejected	Reason for modification/r
	Ver1	Ver2	Proposed new text	Keason		follows		ejection
			off-site area such as emergency response facilities off the site, headquarter of operating organization, etc. should be ensured and confirmed through exercises and drills			[3.38]		
16.	3.117/3	3.118	the emergency response team that - deals with coping with the consequences	Deleting the duplicated description.	Modified [3.118]			
17.	Annex	Annex 1-4	Request to add Japanese latest practices in ANNEX, as representative practices of some member states are presented. Here is an outline. <u>ANNEX IV – Insights on the use of SAMGs in Japanese Nuclear power Plants</u> <u>Contents;</u> 1. <u>Scope of BDBAs</u> <u>– Prevention of Core damage</u> <u>– Prevention of failure of CV functions</u> <u>– Mitigation of the release of</u>	Japan practice and the lessons learnt from the Fukushima-Daiichi NPPs accident should be taken into account for the better understanding of readers.	Add in Appendix I.4			

			COMMENTS BY REVIEWE	ER:		RESOL	UTION	
Review	ver:		Page of					
Countr	y/Organiza	tion: Japan	/NRA Date:					
No.	Para/L Ver1	ine No. Ver2	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/r ejection
						TOHOWS		
			radioactive materials					
			<u>– Mitigation of Extensive</u> Damage					
			2. <u>Features of SAMGs</u>					
			- Consideration of co-occurrence with natural hazards and the SAs in muti-units					
			<u>- Use of permanent and non-</u> permanent equipment					
			- Specialized Safety facility					
			- Integration of equipment and operation					
			3. Regulatory confirmation of SAMGs through review and exercise					

8 Comments of Pakistan

DS483 – Safety Guide: Severe Accident Management Programmes for NPPs

			COMMENTS BY REVIEWER			RESO	LUTION	
Reviewer:	CNS		Page 0	01 of 02				
Country/Or	rganizati	ion: Paki	stan/PNRA Date:	06-11-2015				
Comment No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rejec
	Verl	Ver2				follows		tion
1	1.10/ page 3	1.11	This Safety Guide provides recommendations for the development and implementation of an accident management programme to cope with all possible accident conditions during all modes of operation for the reactor, the spent fuel pool and or any other location of fuel to prevent and/or to mitigate the consequences of severe accidents.	To make the sentence consistent with the opening sentence of Para 1.8		Rephrase to be clear in consistency with SSR 2/1 and 2/2 [1.11]		
2	2.38/ page 13	2.47	The guidance for the mitigatory domain should be presented in the appropriate form, including guidelines, procedures, manuals or handbooks	Procedure includes step wise instructions while in mitigatory domain, the word guideline is preferable	Editorial modified [2.47]			
3	2.48/ page 15	2.58	This should be done only after evaluating the possible benefits and potential negative consequences of such recommended actions and the possibility and consequences of using erroneous information	Optimization of positive and negative consequences of the action.	Editorial modified [2.58]			
4	Page 54	Anne x 1	Annexure 1,11 and III may be replaced by some suitable case study	The approaches mentioned in annexure I, II and III			NUSSC committed	

			COMMENTS BY REVIEWER			RESC	LUTION	
Reviewer:	CNS		Page	01 of 02				
Country/Or	rganizati	on: Paki	stan/PNRA Date:	06-11-2015		1		
Comment No.	Para/Li Ver1	ine No. Ver2	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejec tion
			related to development of accident management programme because the approaches described in the annexure are not in line with the concept of accident management presented in the guide	were developed long before the safety guide was written. In addition, it is not customary in IAEA safety guides to include industry approaches.			Annex can provides explanations or useful information on implementati on approaches in different countries	
5	Genera	1	The guidance presented in the document related to severe accident management of spent fuel pool is very limited. This aspect should be further elaborated	The guidance for spent fuel pool development cannot be easily seen in the document.		This guide is applicable for spent fuel pool stated in 1.11. And the relevant guidance is stated in 1.4b, 1.10, 1.11, 2.21, 3.86, 3.160, 4.1, etc.		
COMMEN	TS BY H	REVIEV	VER		RESOLUTION		I	
Reviewer: Mohammad Sohail Sarwar Page 01 of 02								
Country/Or	rganizati	on: Paki	stan/PAEC Date:	25-Nov-2015				
Comment No.	Para/Li	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejec tion

			COMMENTS BY REVIEWER			RESO	LUTION	
Reviewer:	CNS		Page 0	1 of 02				
Country/Or	rganizati	on: Paki	stan/PNRA Date:	06-11-2015				
Comment No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rejec
	veri	ver2				Tonows		uon
6	2/6(Design extension conditions may or	Clarify		Deleted 1.2		
	Sec		may not involve nuclear fuel	,		not to be		
	1.2)		degradation either in the core or at			redundancy		
	,		other locations where fuel is stored,			with SSR $2/1$		
			while conditions involving nuclear					
			fuel degradation are termed severe					
			accidents					
7	3/10	1.8	Effective implementation of accident	Clarify		Rephrase to be		
	(Sec		management is done in existing plants	Completeness		clear		
	1.7)		through a severe accident	-				
			management programme (hereinafter			[1.8]		
			referred to as "accident management					
			programmes") while already the					
			design of new nuclear power plants					
			explicitly includes the consideration					
			of severe accident scenarios and					
			preventive/mitigative strategies for					
			their management.					
8	4/19	1.9	An accident management programme	Clarify		Rephrase to be		
	(Sec		requires that plants establish the	(prevent fuel damage rather		clear		
	1.8)		necessary infrastructure to effectively	than mitigate)				
			prevent or mitigate severe accident			<mark>[1.9]</mark>		
			conditions, preventive fuel damage,					
			and stabilize the units if fuel damage					
			does occur.					
9	3/10	Table	Responsibilities in mitigatory domain	Relevance				Responsibility for
	Table	1	lies with Emergency Director (or	Completeness				authorisation of
	1		equivalent) and the technical support					actions is given to

			COMMENTS BY REVIEWER		RESOLUTION			
Reviewer:	CNS		Page 0	1 of 02				
Country/O	rganizati	on: Paki	stan/PNRA Date: 0	06-11-2015				
Comment No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rejec
	Ver1	Ver2				follows		tion
			<u>center staff</u>					emergency director or equivalent staff
10	3/8	2.31	The accident management programme	Quality and clarity	Editorial			
	(sec		should be reviewed, periodically. In	(Re-phrasing done)	modified for			
	2.26)		plant configuration, the changes should be reflected in response to		clarification			
			major lessons learned, new results		[2.31]			
			from relevant research, and operating					
			to the accident management					
			programme where appropriate.					
11	6/17	2.33	Preferably, accident management	Clarity	Editorial			
	(sec		guidance should be set out in such a	("Accident" may be in	modified			
	2.28)		responsible staff to identify the	lower case)	[2.33]			
			accident sequence or to follow some					
			pre- analysed accidents in order to be					
			able to execute the accident management guidance correctly					
12	7/22	2.34	In the accident management guidance.	Clarity	Editorial			
	(sec		consideration should be given to	Completeness	modified			
	2.29)		uncertainties in knowledge about the		[<u>0.24]</u>			
			that might occur in the progression of		[2.34]			
			the accident.					
13	2/7	2.37	The equipment should be designed	Clarity	Editorial			

			COMMENTS BY REVIEWER			RESO	LUTION	
Reviewer:	CNS		Page 0	01 of 02				
Country/O	rganizati	on: Paki	stan/PNRA Date: 0	06-11-2015				
Comment No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rejec
	Verl	Ver2				follows		tion
	(sec		against accident conditions/loads for		modified			
	2.31)		severe accidents and external hazards,					
			commensurate with the intended		[2.37]			
			function that is to be fulfilled which					
			provide adequate margin to failure					
			when it is expected to operate.					
14	6/11	3.1	Suitable accident management	Clarity		Rephrase s		
	(sec		strategies and measures should be			paragraph		
editorial	3.1		developed, including the use of					
	(4))		permanent (fixed) and onsite/offsite			[3.1]		
			non-permanent (portable and mobile)					
			equipment and instrumentation to					
			cope with the vulnerabilities					
1.5	- /10/		identified; and		D.1. FOD			
15	7/18(Actions used in preventive accident	Clarity	Delete EOP			
1 1	sec		management should be included in	Completeness	scope			
editorial	3.5)		EOPs, and, in case of external	(word "by" omitted)				
			hazards, further detailed special					
16	0/26(procedures designed for this purpose	Clarity	Dalata ta			
10	9/20(Besides activities performed as part of	Clarity	Delete to			
	304		assessment of plant vulnerabilities	Completeness	avoid			
	5.94)		and capabilities, the following	(content missing after	redundancy			
COMMEN					DESOLUTION	T I		
COMMEN		NE V IE V NG	VER Page ()	$1 \circ f 0 2$	RESOLUTION	N		
Country/O	Country/Organization: Pakistan/PAEC Date: 25-Nov-2015							
17	3.68		The background material should	Acceptable but this	Deleted			
	Para		fulfil the following roles:	requirement needs to be				

			COMMENTS BY REVIEWER			RESO	LUTION	
Reviewer:	CNS		Page 0	1 of 02				
Country/O	rganizati	on: Paki	stan/PNRA Date:	06-11-2015				
Comment No.	Para/Li	ne No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rejec
	Ver1	Ver2				follows		tion
Backgrou	2		(2) It should provide a	mentioned in other	<mark>[3.64]</mark>			
nd			demonstration of compliance	paragraphs, where				
document			with the relevant quality	appropriate.				
shou be			assurance requirements;					
confirme d OA								
18	3.76	3.79	Equipment upgrades aimed at	Bullets following this		Rephrase		
			preserving the containment function,	paragraph describe the		paragraph		
Mostly			or minimizing releases when the	details of functions of the				
applicabl			containment function has been lost or	equipment upgrades for		[<u>3.79]</u>		
e for both			by-passed should be considered as a	both the preventive and				
			high priority for both the preventive	mitigatory domains. For				
			and mitigatory domains. In particular,	further clarity, these details				
			equipment upgrades which increase	need to be mentioned for				
			capability or margin to failure for the	each domain separately.				
			following functions should be taken					
			into account:					
19	3.26	2.21	Specific consideration should be paid	Devastating consequences		Modified to		
	Para		to accidents developing when the	of Fukushima Daiichi		add rephrases		
	5		nuclear installation is in a shutdown	accident has forced the				
infomatio			state, as the containment <u>barrier</u>	international nuclear		[move to		
n			functionally could be lost and	community to revisit design		2.19b]		
			restoration is difficult in some	for the re-assessment of				
			cases.	nuclear installations to		[2.21]		
				identify vulnerabilities and				
				increase their plant's				
				robustness against natural				
				hazards. This Guide				

			COMMENTS BY REVIEWER			RESO	LUTION	
Reviewer:	CNS		Page 0	01 of 02				
Country/Or	rganizati	on: Paki	stan/PNRA Date:	06-11-2015				
Comment No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rejec
	Ver1	Ver2				follows		tion
				purposefully prepared provides necessary guidance in this regard. The details containing requirements are very much focused to nuclear installations (Nuclear Power Plants) rather basic or fuel cycle facilities. Therefore, the word "facility" may be replaced with "nuclear installation"				
20	2.20	2.25	Accident management guidance should also consider that in case of	As per scenario, transportation will be		Modified to added		
Informati			external hazards, there may be	impossible and hence		additional		
on			extensive infrastructure damage, so	availability of spare parts		information		
			that offsite resources are not readily	and lube oil need to be				
			available, including human resources	considered along with		[2.25]		
			and/or communication, electrical	compressed air, water and				
			power, transportation, availability	fuel.				
			of spare parts, lube oil, compressed					
			air, water and fuel.					

9 Comments of Russian Federation

DS483 – Safety Guide: Severe Accident Management Programmes for NPPs

			COMMENTS BY REVIEWER			RESC	DLUTION	
Reviewer:	Rostechr	nadzor, l	Russia Page 1	of 4				
Country/Or	rganizati	on: Scie	ntific and Engineering Center for Nuclea	r and Radiation Safety				
Date: 01 D	ec 2015		6 6	2				
Comment	Para/Li	ine No.	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
No.			•			but modified	U U	modification/rejec
						as follows		tion
1	1.8	1.9	The accident management programme	The number of possible		Rephrase to		
	First		needs to consider all modes of	conditions which are to be		be clear		
	sente		operation, all possible conditions,	considered in the first				
	nce		including combinations of events that	sentense is practically		[1.9]		
			could cause failure of fuel cooling and	unlimited, and they cannot be				
			ultimately significant radiological	considered in details as it ie				
			releases to the environment.	required for development of				
			Representative accident scenarios	accident management				
			shall be selected for further detail	programmes. They can be				
			analysis.	considered on in a generalized				
				form. Therefore it is necessary				
			3.95 details is described in para	to select some most				
			1	representative conditions and				
				scenarios which cause them				
				for a detailed condition.				
2	1.12	1.15	This Safety Guide is intended	Not all regulators consider	Modified to			
	First		primarily for use by operating	development of accident	add examples			
	sente		organizations of nuclear power plants,	management programme as a				
	nce		licensees and their support	voluntary matter of the	[1.15]			
			organizations. It can be used also by	operating organizations. For				
			regulators and technical support	example, in Russia, it is				
			organizations while developing	written down in requirements				
			national regulations on accident	of the highest level. For such				

			COMMENTS BY REVIEWER			RESC	DLUTION	
Reviewer:	Rostechi	nadzor, l	Russia Page 1	of 4				
Country/Or	rganizati	on: Scie	ntific and Engineering Center for Nuclea	ar and Radiation Safety				
Date: 01 D	ec 2015			-				
Comment	Para/Li	ine No.	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
No.						but modified		modification/rejec
						as follows		tion
			management programme.	regulations, the standard				
				under development is				
				necessary to the same extent				
				as for operators.				
3	Table	Table	We propose to exclude words: or	These words refer to the		Accident		
	1,	1	decision, by the Technical Support	accident management		management		
	last		Center, measures beyond the defined	organization which can vary		organization		
	line,		operational range of the system	in different countries. For		is various in		
	colu		require advice, of instructions, by the	example, in Russia, any		different		
	mn 2		Technical Support Centres.	decisions can be taken by the		countries so		
				authorized person (so called		add Footnote		
				the accident management				
				chief). All others can only				
				provide information and				
1	27	26	We propose to delete the factness "	This feetnets has no direct	Dalata			
4	2.7,	2.0	The possibility of certain conditions	connection to para 2.7 and can	footnoto			
	ote 6		occurring is considered to have been	be excluded. One more reason	Toomote			
	(14)		practically eliminated if it is	for excluding it is that the	[<u>26]</u>			
	(14)		physically impossible for the	footnote can lead to	[2.0]			
			conditions to occur or if the	misinterpretation of para 2.7				
			conditions can be considered with a	(practically eliminated				
			high level of confidence to be	conditions cannot be covered				
			extremely unlikely to arise".	by accident management				
				programmes" which is wrong)				
5	2.45,	2.54	In the first sentence we propose	The control room supervisor,		Rephrase to		
	secon		exclude words: "In the preventive	the safety engineer or other		add example		
	d and		domain". The second sentence we	designated official has to be		practice		

			COMMENTS BY REVIEWER			RESO	DLUTION	
Reviewer:	Rostechi	nadzor, I	Russia Page 1	of 4				
Country/Or	rganizati	on: Scie	ntific and Engineering Center for Nuclea	r and Radiation Safety				
Date: 01 D	ec 2015			1		- I	1	
Comment	Para/Li	ine No.	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
No.						but modified		modification/rejec
		1				as follows		tion
	third		propose to exclude completely.	capable to perform works in		[2.54]		
	sente			any aspects of accident				
	nce			management until the person				
				authorized to manage				
				emergency works starts to				
6	2.00	2 102	Address a sufficiently hused set of	execute his duties.	Madified to			
0	5.99 The	5.105	Address a sufficiently broad set of	demage state" to insert the	molta alaan			
	ropro		accident scenarios adequatery	word "representative" because	make clear			
	sonto		initiating events into design extension	the word "comprehensive" is	[2 102]			
	tivo		conditions and a comprehensive set of	the word comprehensive is	[5.105]			
	seque		representative plant damage states	too uncertain.				
	nces		representative plant damage states.					
	were							
	grou							
	ped							
	into							
	plant							
	dama							
	ge							
	states							
7	3.127	3.127	We propose to exclude this para	This para does not reflect the		Rephrase		
				actual practice of all		paragraph to		
			Look footnote: 102	countries. So, in Russia,		add example		
			These include activities that control	transfer of emergency works				
			room staff can carry out	management to the accident		[3.127]		
			independently, such as maintaining	management chief happens in				
			support conditions (e.g. room cooling	all cases upon his arrival to				

		COMMENTS BY REVIEWER			RES	OLUTION	
Reviewer:	Rostechnadzor,	Russia Page 1	of 4				
Country/Or	rganization: Scie	ntific and Engineering Center for Nuclea	r and Radiation Safety				
Date: 01 D	ec 2015						
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejec tion
		service water) and responding to some alarms; activities that the control room staff should not do on their own (e.g. starting up major equipment) should also be specified	NPP until irrespective of severity of the accident.				
8	Anne Anne x x 1	Annexes I, II and III provide descriptions of specific severe accident management guideline (SAMG) implementation approaches in different countries (France, Germany and the United States of America). Russia Federation adopted USA approach.	It seems reasonable to include one more example into the appendix – the approach to the development of accident management guidance accepted in Russia. In case of adoption of this proposal Russia will submit the corresponding text.				Structure of ANNEX was modified as "ANNEX II Examples of Using SAMGs in Nuclear Power Plants" to add more information) on implementation approaches in different countries
COMMEN	TS BY REVIEW	VER			RES	OLUTION	L.
Reviewer:	A. Kolevatykh	Page o	f				
Country/Or	rganization: JSC	Concern Rosenergoatom/Russian Federa	ition				
Date: 14/12	2/2015	-					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejec tion
9	2.21(2.27 last sente	As large scale maintenance is frequently carried out during planned shutdown states, a high priority of the	This is to specify the statement in order to avoid possible ambiguity, because	Editorial modified			

			COMMENTS BY REVIEWER		RESC	OLUTION		
Reviewer:	Rostech	nadzor, l	Russia Page 1	of 4				
Country/O	rganizati	on: Scie	ntific and Engineering Center for Nuclea	r and Radiation Safety				
Date: 01 D	ec 2015			•				
Comment	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
No.						but modified		modification/rejec
						as follows		tion
	nce)		accident management guidance aimed	the principal objective in any	[2.27]			
			at protection of people and should be	accident situation shall be				
			the safety of the workforce.	protection of people and the				
				environment. As concerned to				
				individual professionals, a				
				possible exposure to increased				
				dose levels is contemplated				
				for accident situations.				
10	2.40(2.49	The overall form of the guidelines and	At the stage of development,	Editorial			
	1st		the selected level of detail should be	prior to be brought into force,	modified			
	sente		tested in course of validation of the	the guidelines shall undergo				
	nce)		guidelines and then in drills and/or	verification and validation	[2.49]			
			exercises. Based on the outcome of	process and only then shall be				
			such drills and/or exercises,	tested in drills and exercises				
				and be modified as necessary				
1.1	2.40	2.42		based on their results.		D 1		
11	3.48	3.43	Nevertheless, it may be appropriate to	EOPs preferably should		Rephrase		
	(4th		apply the diagnostic procedure at	utilize the symptom-based		paragraph to		
	sente		regular intervals to make it	approach (SB-EOP) i.e. based		focus on		
	nce)		possible to transfer to implementation	on plant conditions rather than		mitigate		
			of high priority accident management	on diagnostics of the event		domain		
			actions feture to the procedure	occurred. The event-based		[<u>2</u> 42]		
			specifically developed for the	approach may be unsafe m		<mark>[3.43]</mark>		
			observed accident sequence.	of the accident sequence. The				
				of the accident sequence. The				
				a diagnostics at regular				
				intervals aimed at transfer to				
1				intervals aimed at transfer to				

			COMMENTS BY REVIEWER			RESOL	UTION	
Reviewer:	Rostech	nadzor, l	Russia Page 1	of 4				
Country/O	rganizati	on: Scie	ntific and Engineering Center for Nuclea	r and Radiation Safety				
Date: 01 D	ec 2015							
Comment	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
No.						but modified		modification/rejec
						as follows		tion
				implementation of high-				
				priority accident management				
				actions or strategies, while				
				any return to EOP implies a				
				risk of additional errors.				
				The 4th sentence in para 3.48				
				should be either modified as				
				proposed, or fully deleted.				
12	3.69	3.65	Relevant management levels in the	This is to specify the list of		Modified to		
			operating organization of the plant, as	persons and organizations to		add		
			well as outside organizations	be notified.		additional		
			including local authotiries responsible			relevant		
			for the protection of the public and			organizations		
			environment should be made aware of			10 651		
			the potential need for transition to the			[3.63]		
12	2.05	2.96	Maintananaa taatina and inanaatian	This as an increased for a state		Madified to		
15	5.85	5.80	procedures should be developed for	agging and a vista in other		Modified to		
			equipment including non permanent	safety standards. It is		auu 11011-		
			equipment to be used in accident	advisable to emphasize here				
			management taking into account the	this requirement with regard		equipment		
			safety significance of such equipment	to non-permanat equipment		[3.86]		
			surety significance of such equipment.	to avoid its passing unnoticed		[5.00]		
14	3.86	3.91	Essential instrumentation needed for	An addition regarding		Modified to		
			monitoring core, containment and	provisions for DC power		add 3.86b		
Add new			spent fuel conditions should be	supply to I&C equipment in				
3,86a			identified. To the extent practicable	case of total blackout.		[3.91]		
			these monitoring functions should be					

			COMMENTS BY REVIEWER		RESOLUTION			
Reviewer:	Rostechi	nadzor, H	Russia Page 1	of 4				
Country/Or	rganizati	on: Scie	ntific and Engineering Center for Nuclea	r and Radiation Safety				
Date: 01 D	ec 2015		6 6	2				
Comment	Para/Li	ine No.	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
No.						but modified		modification/rejec
						as follows		tion
			maintained throughout an extended					
			loss of AC power event. A plant-					
			specific assessment should be					
			performed to identify equipment,					
			materials and actions to restore power					
			to the minimum essential components					
			in the event installed DC batteries are					
			depleted.					
			In order to save capacity of DC					
			batteries and to extend the period of					
			availability of power supply to					
			essential instrumentation, one should					
			develop procedures or provide					
			guidance on disconnection of					
			"excessive" (i.e. non-essential and					
			being not employed in accident					
			management) DC loads.					
15	3.90	3.135	All available information and	It is necessary to specify how		Already		
			background documentation on key	this information would be		stated in		
			instrumentation needed to support	transmitted,		3.136		
			accident management decision					
			making should be available to			[<mark>3.135]</mark>		
			appropriate members of the					
			emergency response teams.					
			To achieve this goal, as a preferable					
			option, a direct access of appropriate					
			teams to readings of key					
			instrumentation should be ensured to					

			COMMENTS BY REVIEWER			RESO	LUTION	
Reviewer:	Rostechr	hadzor, I	Russia Page 1	of 4				
Country/Or	rganizati	on: Scie	ntific and Engineering Center for Nuclea	r and Radiation Safety				
Date: 01 D	ec 2015		e e	2				
Comment	Para/Li	ine No.	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
No.						but modified	-	modification/rejec
						as follows		tion
			appropriate TSC members of the					
			emergency response team. If this is					
			not possible, a procedure and data					
			transfer protocols should be					
			developed for provision of such					
			information.					
16	3.133	3.133	The mechanisms for calling on early	To use more specific word to		Modified the		
	(last		support should be established, and the	avoid ambiguity		sentence		
	sente		support organizations capabilities					
	nce)		should be verified on a periodic basis.			[<u>3.133]</u>		
17	4.1(la	4.1	Capability to communicate within the	Availability of both internal	Modified			
	st		plant emergency command and	and external communications				
	bullet		control structure and with off-site	is a prerequisite of an efficient	[4.1]			
)		organisations	command and control.				
COMMEN	TS BY I	REVIEW	VER		RESOLUTION	N		
Reviewer:	A. patrik	eev	Page of					
Country/Or	rganizati	on: JSC	Concern Rosenergoatom/Russian Federa	tion				
Date: 03/12	2/2015		-					
18	3.128	3.128	If transfer of authority to off-site	It is necessary to ensure that		Delete due to		
	/line	,	persons is contemplated, it should be	the communication function		duplicated		
	5	3.136	verified that such persons have the	would not be lost due to		with 3.137		
			required background to efficiently	common cause failure. In the				
			exercise such authority. The impact of	same time, it is not		[<u>3.128</u> ,		
			external hazards should be	appropriate to require		<mark>3.136]</mark>		
			considered. In particular, a highly	guidance for the case of				
			reliable communication network	failure of the communication				
			based on the principles of	network because the				
			redundancy, diversity and physical	communication shall be				

		COMMENTS BY REVIEWER		RESOLUTION			
Reviewer:	Rostechnadzor, I	Russia Page 1	of 4				
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Date: 01 D	ec 2015						
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejec tion
		separation of communication channels should be provided, together with- guidance for the case of failure of the communication network.	ensured in any NPP mode including severe accident.				
19	4.4/li 4.4 ne 4	Decisions on actions to be taken should be given to the control room staff in a form that minimizes misunderstandings. The main control room staff should confirm the actions it is being directed to take and should report back the progress of the actions taken and the impact that these have on the plant. Oral (telephone or other type using electronic means) communication to the control room staff should preferably be carried out by a technical support centre staff member who is a licensed operator. A major step prior to recommending or attempting executing an action is to check feasibility of proposed actions.	Various communication types and channels could be used including wire or wireless telephone, television, digital communications, etc.		Modified [4.4]		
20	3.89/1	It should be confirmed that	Useful information on		Delete due to		
	ine 4	information needed for decision	accident progression can be		redundancy		

	COMMENTS BY REVIEWER					RESOLUTION			
Reviewer:	Rostech	nadzor, I	Russia Page 1	of 4					
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Date: 01 D	ec 2015		C C	-					
Comment	Para/Li	ine No.	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for	
No.						but modified		modification/rejec	
						as follows		tion	
			making during execution of accident	obtained from results of		with 3.86			
			management strategies can be	radiation monitoring (using					
			obtained from the instrumentation in	such parameters as gamma					
			the plant. Such information should be	dose rate, volumetric activities					
			available in all places where the	of radionuclides in air)					
			evaluation and decision making is to						
			be made. Where instruments can give						
	information on the accident								
	progression in an indirect way (e.g. bt on-site measurements of radiation								
			on-site measurements of radiation						
			levels), such possibilities should be						
			investigated and included in the						
			guidance.						
21	Refer	Refer	References [8] and [10] shall be	References [8] and [10] to the	Corrected				
	ences	ence	merged	same GSR Part 7 document					
	/[8],[are redundant					
	10]								
COMMEN	TS BY I	REVIEW	VER		RESOLUTION	N			
Reviewer:	S. Kharla	ampiev	Page of						
Country/Or	rganizati	on: JSC	Concern Rosenergoatom/Russian Federa	tion					
Date: 03/12	2/2015						I		
22	ANN	Anne	In addition, to keep abreast with the	There are two nearly identical	Modified				
	EX	x 1-1	international community, the	sentences. The duplication					
	II/Li		development of SAMGs has been	should be removed based on					
	nes		started in 2010, and was fully	the actual status of SAMGs					
	7-10		completed end of 2014. In addition, to	development.					
			keep abreast with the international						

	COMMENTS BY REVIEWER					RESOLUTION			
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Date: 01 D	Dec 2015								
Comment	Para/Li	ne No.	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for	
No.						but modified		modification/rejec	
						as follows		tion	
			community, the development of						
			SAMGs has been started in 2010, and						
			full completion is contemplated for-						
			the end of 2014.						
COMMEN	NTS BY I	REVIEV	VER	·	RESOLUTION	1			
Reviewer:	L. Blino	v	Page of						
Country/Organization: JSC Concern Rosenergoatom/Russian Federation									
Date: 03/1	2/2015		-						
23	3.10/	3.7	Accident management programmes	A refinement aimed at	Editorial				
	1st		may be developed first on a generic	specification of the range of	modified in				
	sente		basis, by a plant vendor or other-	possible developers of generic	compliance				
	nce		organization, reactor unit and plant	severe accident management	with safety				
			designer organizations or other	programmes and guidelines,	glossary				
			organization duly authorized by the						
			operating organization to perform		[<u>3.7]</u>				
			such work, and may then be used by a						
			plant utility for development of a						
			plant specific accident management						
			programme						
24	3.13	3.68	The staff who will be working in the	We believe that specialists	Editorial				
			Experienced control room operators,	with significant operating	modified				
			senior operational staff, expert from	experience should be involved					
			or technical support centre or any	in accident management	[move to				
			other organizational unit responsible	programme development	3.69c]				
			for evaluation, decision-making, and	rather than "future operators"					
			implementation in the course of an	-	[<u>3.68]</u>				
			accident should be involved at an						
			early stage of development of an						

			COMMENTS BY REVIEWER		RESOLUTION				
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Date: 01 D	ec 2015								
Comment Para/Line No.		ine No.	Proposed new text	Reason Accepted		Accepted,	Rejected	Reason for	
No.						but modified		modification/rejec	
						as follows		tion	
			accident management programme, as-						
			this provides valuable training for-						
			future tasks and feedback to provide						
			feedback for its subsquencial review.						
25	3.43 /	3.34	Procedures and guidelines should be	Procedure and guidelines		Rephrase the			
	1st		written in an understandable and a	should be understandable and		paragraph			
	sente		user friendly way so that they can be	easy-to-use to maximum					
	nce		readily executed under high stress	possible extent, in order to		[3.34]			
			conditions, and should contain	minimize any possible					
			sufficient detail to ensure the focus is	ambiguities of the perceived					
			on the necessary actions.	instruction and any possible					
2.5	0.47/	0.1		errors induced.		G 11			
26	3.4 //	3.1	The set of procedures and guidelines	There are many plant		Combine			
	İst		should include relevant plant-	parameters, but not all of them		with 3.1			
	sente		parameters design limits that should	are important for accident		[2] 1]			
	nce		be monitored and they should be	limite es e mile ene		[3.1]			
			referenced of linked to the criteria for	determinent for NDD sofety					
			the various systems	determinant for NPP safety.					
27	3 52/	3.46	The guidelines should be written in	In case of accident at an NPP		Rephrase the			
21	1st	5.40	such a way that there is a possibility	the plant initiates plans like		naragraph			
	sente		to deviate from an anticipated action	"Plan of actions in an		purugrupn			
	nce		plan path where this might be	emergency" or " nlan of		[<u>3 46]</u>			
	nee		necessary or beneficial	personnel protection measures					
			neeessary of concinental.	in case of accident" The					
				clause "to deviate from an					
				anticipated path" is not quite					
				clear, because "path" is					

	COMMENTS BY REVIEWER					RESOLUTION			
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Date: 01 D	ec 2015								
Comment	Para/Line	No.	Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for	
No.						but modified		modification/rejec	
						as follows		tion	
				generally not a documented					
				instruction but a mental					
				interpretation.					
COMMEN	TS BY REV	/IEW	/ER		RESOLUTION				
Reviewer:	L. Blinov		Page of						
Country/Organization: JSC Concern Rosenergoatom/Russian Federation									
Date: 03/12	2/2015			1		1			
28	3.19 3.1	10	Add at the end of para:	Acceptance with new				Out of scope	
			"provision of liveness of NPP due to,	malicious treats to nuclear					
			among others, use of outer (reserve)	objects as possible goals of					
			control rooms. Provision of several	ecologic terrorism. New					
			protected and physically separated	scenarios of anthropogenic					
			communication links with a reserve	effects on NPPs including					
			control room, with a reserve power	malicious acts outside the					
			supply, and possibility to remove the	NPP site.					
			staff in a secure regime to a reserve						
			control room (this is not AM role).						
			For multi-unit site an outer mobile						
			protected control room can be						
			proposed, which could be						
			communicated with protected						
			communication lines in case of						
			progress of the emergency situation						
			on site.						
29	3.25 3.1	15	Add text of para with " by the NPP	Appearance of new malicious		Rephrase and			
			staff including workers from the	treats to nuclear object as		separate as			
			technical support center, and to take	possible goals of ecology		3.25a			
			into consideration also the restriction	terrorism. New scenarios of					

			COMMENTS BY REVIEWER		RESOLUTION			
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Date: 01 D	ec 2015		0 0	2				
Comment	ent Para/Line No. Proposed new text		Proposed new text	Reason	Accepted	Accepted,	Rejected	Reason for
No.			-			but modified	-	modification/rejec
						as follows		tion
			of unauthorized access to such	anthropogenic effects on		[3.15]		
			equipment, firstly to reserve control	NPPs including malicious acts		L .		
			room and information channels.	outside the NPP site.				
30	3.114	3.115	New wording	Additional possibilities of		Rephrases to		
			Contingency plans should be	cooperation of the control		make clear		
			developed for situations where	room staff with external staff.				
			accident management staff have been	Prior to preparation of the		[3.115]		
			incapacitated and cannot get support,	control room staff to				
			can be evacuated and substituted by	anticipated actions of external				
			the outside support staff, or if the	staff in the emergency				
			outside support is delayed and control	environment. Making of route				
			room staff to continue the emergency	for the control room staff to				
			management via reserve	the reserve control room for				
			communication lines, continuing	continuation of emergency				
			keeping the source information about	management.				
			the emergency situation"	C				
			or when outside support may be					
			delayed.					
31	3.115		Insert in first line of 3.115 between	Provision of preparedness of		Rephrases to		
			"developed and to help" "for the case-	the control room staff to joint		make clear		
			of an emergency ("during a natural	work with the external support				
			disaster or nuclear accident"), training	forces in stress conditions of		[3.116]		
			of staff and preparation of	an emergency situation.				
			administration to the dialog between-					
			control room staff and reserve in-					
			order control room staff (guidance					
			····					

10 Comments of South Africa

DS483 – Safety Guide: Severe Accident Management Programmes for NPPs

			COMMENTS BY REVIEWER		RESOLUTION				
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Country/C	Organizati	on: South	Africa	Date:					
Comme nt No.	Para/Line No.		Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject	
	Ver1	Ver2				follows		ion	
1	1.6(2)	1.7	We propose changing the last bullet to: "-performing actions to avoid or limit fission product releases to the environment." The way it is currently written opens the door to argue that given a long enough time for decay, any release decays away limiting long-term off- site contamination. It can also be interpreted as saying that releasing contaminated water into the ocean is acceptable because it doesn't cause			Modified the last bullet to clarify [1.7]			
2	1.10	1.11	The scope of the document is Accident Management yet the title of the safety guide is Severe Accident Management. The IAEA could consider removing the word "Severe" from the title of this safety guide or refining the guide to just consider Severe Accident Management.			Section 2 is "General Guidance for the Accident Management" so that it compasses both domains. However, in Section 3 "Development and			

			COMMENTS BY REVIEWER		RESOLUTION			
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Comme	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for
nt No.						modified as		modification/reject
	Ver1	Ver2				follows		ion
						Inculant and a tic		
						implementatio		
						all aspects of		
						the preventive		
						domain are		
						removed.		
						NUSSC		
						recommended		
						to keep it		
						No change		
						made		
3	Table	Table	We propose replacing "Use of			Modified to		
	1	1	guidance documents (SAMGs) by			rephrase to be		
			Technical Support Centre or other			clear		
			designated staff' with:					
			"Use of guidance documents (Severe					
			Accident management Guidelines					
			[SAMGS]) by Technical Support					
			Centre of other designated					
			Preventative Domain terminology and					
			because the TSC is not a "staff"					
4	2.12	2.12	After "non-permanent equipment" add			Editorial		
	Footno		(portable and mobile)			modified and		
	te 16		in the same way as Section 3.1(4) to			add footnote		
			ensure consistency					
			-			[2.12]		
5	2.16	2.15	After "non-permanent equipment" add:					Defined earlier in
			(portable and mobile)					footnote of para.

			COMMENTS BY REVIEWER		RESOLUTION			
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Comme nt No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Verl	Ver2				follows		ion
			in the same way as Section 3.1(4) to ensure consistency.					2.12 No change made
6	2.36	2.45	Most new plant designs take account of severe accidents in their design. This reduces the uncertainties that may be expected during a severe accident, and mitigation actions could be provided in procedures rather than guidelines. Proposed wording changes are shown below in bold: "In the mitigatory domain, large uncertainties may exist in the plant status, availability of plant systems and in the timing and outcome of actions for accidents that were not considered in the design basis. Consequently, the guidance for the mitigatory domain, for accidents that were not considered in the design basis, should not be prescriptive in nature but rather should include a range of potential mitigatory actions and should allow for additional evaluation and alternative actions. Such guidance is usually called severe		Editorial modified [2.45]			
	2.40	0.50	accident management guidelines."		D 1'			
7	2.48	2.58	Remove the sentence :		Editorial			
			"This should be done only after		modified			
			evaluating potential negative					

			COMMENTS BY REVIEWER		RESOLUTION			
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	Ver1	Ver2				follows		ion
			consequences of such recommended actions and the possibility and consequences of using erroneous information." This sentence is too prescriptive in terms of the decision making methodology used in the severe accident management approach, and may not be appropriate for new plan designs that already consider severe accidents in their design basis. The intent of this sentence is also implicit in the previous sentence , "to recommend mitigatory actions as deemed most appropriate for the		[2.58]			
8	3.2	3.2	The document uses the following terms		Editorial modified to			
	3.22	3.22	Engineering Judgement		use			
			Sound Engineering Judgement		engineering			
			• Expert Judgement		judgement			
			We are unable to find the definitions					
			and differences between these terms in		[3.2, 3.5, 3.22			
			the IAEA Safety Glossary. For		deleted due to			
			example, what is the difference		redundancy			
			between Engineering Judgment and		phrases in			
			Sound Engineering Judgment?		3.7]			
9	3.4	3.3	This paragraph is about preventive		Editorial			
			accident management. We recommend		modified			
			COMMENTS BY REVIEWER			RESO	LUTION	
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Country/C	Organizati	ion: South	Africa	Date:				
Comme nt No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Ver1	Ver2				follows		ion
			changing the first sentence: 'Selection of events should be sufficiently comprehensive to provide a basis for guidance for the plant personnel in the preventive accident		<mark>[3.3]</mark>			
			management regime "					
10	3.4	3.3	It is not clear what "affected plant" means. Affected plant is normally used		Editorial modified to			
			for the plant in accident conditions.		be applicable			
			we suggest using:		for both			
			experience "		domains			
					[3.3]			
11	3.4	3.3	Throughout the document you somet		Editorial			
			imes use "PSA Level #" and		modified to			
			sometimes use '•PSA level #". We		be applicable			
			suggest you standardise using "PSA		for both			
			Level #		domains			
					[3.3]			
12	3.5		The EDMGs are guidelines, not		Delete EOP			
			procedures. We suggest changing "special procedures" to "specific guidance".		scope			
13	3.6	3.4	Need to clarify whether this paragraph		Editorial			
			refers to the preventive regime, like the		modified to			
			previous 3 paragraphs, or the		clarification			
			mitigatory regime. This paragraph					
			refers to the "evolution of a severe		[3.4]			

			COMMENTS BY REVIEWER		RESOLUTION			
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	Ver1	Ver2				follows		ion
			accident", which suggests that it refers to the mitigatory regime. If that is the case, the following change could be made: "The mitigatory accident management guidance should address the full					
			spectrum"					
14	3.7	3.5	To establish a clearer link to paragraph 3.6, we recommend adding the following words:		Editorial modified			
			"For determination of the full spectrum of challenge mechanisms to fission product barriers,"		[3.5]			
15	3.7	3.6	We recommend adding a new paragraph after paragraph 3.7 to emphasize that the PSA is not infallible and that it should not be used to restrict the scope of the severe accident management programme. Severe accident management is part of the IAEA definition of defence-in- depth, and should not be argued away using probabilistic arguments . We recommend retaining paragraph 3.5 from the old safety guide: "In view of the inherent uncertainties involved in determining credible events, the PSA should not be used a priori to exclude accident scenarios			Modified to add a new paragraph 3.7a [3.6]		

			COMMENTS BY REVIEWER			RESC	DLUTION	
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Comme nt No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Ver1	Ver2				follows		ion
			from the development of severe					
			accident management guidance."					
16	3.8		This is technically not a sentence . We		Deleted to			
			think what you are trying to say is		due to			
			"Dependencies between External		redundancy			
			Hazards should be considered". In		with 3.7			
			which case, 3.8 should be a bullet					
			point under 3.9.					
17	3.9	3.1	Paragraphs 3.3 to 3.8 are better placed		Combine with			
			as bullet points under 3.9.		3.1 and			
			How does 3.1 wh ich discusses how to		modified			
			set up and AM programme differ from					
			3.9 which is for the development of		[3.1]			
			and AM programme. Is "setting up"					
			different to "developing"? We think					
			3.1 addresses the "process" while 3.9					
			addresses the "content" in which case					
			they need to be reworded to state this.					
18	3.11	3.8	How is "full support" different to		Editorial			
			"support" and the meaning of "full		modified			
			support" is not defined in the IAEA					
			Safety Glossary.		[3.8]			
			We suggest deleting the last 11 words					
			of 3.11 as setting up a development					
			team is, by definition, an indication of					
			management support.					
			We suggest replacing the word					
			"assembled" with "involved" as it is					
			not credible to have all the personnel					

			COMMENTS BY REVIEWER			RESC	DLUTION	
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Comme nt No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Ver1	Ver2				follows		ion
			under 3.12 assembled on a full term basis					
19	3.12	3.67	While all the departments listed need to be involved for certain aspects of the development and implementat ion,		Editorial modified			
			we do not see all these personnel required all the time. Further, adding the words "as appropriate" makes the		[Move to 3.69b]			
			the words "as appropriate" makes the statement weak .We suggest wording it that these personnel had to have been involved but not necessarily as part of the development team: "The development team should contain staff responsible for the development and implementat ion of the accident management programme in the plant. The development team should ensure involvement from personnel from the		[3.67]			
			training department, operations staff, "					
20	3.13	3.68	The "evaluation, decision-making, and implementation" of what? We suggest adding: " and implementation of accident management actions in the course of an accident"		Editorial modified [Move to 3.69c] [3.68]			
21	3.15		What is the difference between 3.15, 3.8 and 3.6, and why can they not be combined? Should not 3.6 and 3.15 be		Deleted due to redundancy			

			COMMENTS BY REVIEWER			RESOLUTION Accepted, but modified as follows Rejected Reason for modification/reject ion Image: Constraint of the second seco		
Reviewer	:		Page of					
Country/	Organizati	on: South	Africa	Date:				
Comme nt No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Ver1	Ver2				follows		ion
			part of 3.9?					
22	3.16		Why is this limited to accident		Deleted due			
			management guidelines and not also		to redundancy			
			procedures? Previously it was stated					
			that procedures and guidelines should					
			be used. Suggest stating "procedures and guidelines".					
			Does this include temporary plant					
			changes and temporary operating					
			instructions? Does this include changes					
			to Operating Technical Specifications?					
			Does this include changes to Safety					
			Related Surveillance testing?					
			Paragraph 3.16 is important but should					
			provide greater clarity					
23	3.17		This statement contradicts 3.6. Should		Deleted due			
			all events be considered or only those		to redundancy			
			that are credible?					
			It is not clear if this paragraph refers to					
			the preventive or mitigatory regimes.					
			Should the scope of the safety					
			assessment be different for these two					
			regimes?					
24	3.18	3.9	We suggest replacing "instructions"		Editorial			
			with "guidance". "Guides" do not		modified			
			generally issue "instructions" and 3.18					
			seems to be inferring "guides" should		[<mark>3.9]</mark>			
			be available.					
			The last sentence is unclear since the					

			COMMENTS BY REVIEWER		RESOLUTION Accepted Accepted, but modified as follows Rejected Reason for modification/reject ion			
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Comme nt No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Ver1	Ver2				follows		ion
			"site" generally includes it's "buildings". If the term "site" is being					
			buildings . If the term site is being					
			roads then this should be specified					
25	3.19	3.10	Why is the first fission product barrier		Deleted not to			
			singled out in the second sentence? We		limit as single			
			suggest deleting including fuel .		[<u>3.10]</u>			
26	3.21,	footnot	The footnote should be updated to			Delete		
		e 31	reference the latest EPRI Technical			footnote but		
			Basis Report:			referred in		
			Severe Accident Management			Annex I-3		
			Guidance Technical Basis Report,			USA practice		
			Volumes 1 and 2, 1025295, EPRI, Palo					
			A lto, CA (2012).					
27	3.23	3.71	Do you include severe accidents occurr		Move to			
			ing simultaneously on several units? If		3.70a and			
			so, this needs to be specified. Currently		modified			
			3.23 does not expect accident					
			management to consider simultaneous		[3.71]			
			severe accidents such as that which					
			occurred at Fukushima. We feel it					
			should and so suggest adding ",					
			including severe accidents," after					
			"accidents" in the first sentence.					
28	3.30		Although the statement can be			Delete prevent		
			interpreted to include Spent Fuel Pool			domain: due to		
			accidents, this is no specifically			duplicated		
			specified. Please consider making this					

			COMMENTS BY REVIEWER			RESC	DLUTION	
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Country/C	Organizati	on: South	Africa	Date:				
Comme nt No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Ver1	Ver2				follows		ion
			clearer.					
29	3.31	3.20	Although the statement can be interpreted to include Spent Fuel Pool accidents, this is no specifically specified. Please consider making this clearer.		Editorial modified to add "spent Fuel pool"			
30	3.35	3.25	After "non-permanent equipment" add (portable and mobile) in the same way as Section 3.1(4).					Defined earlier in footnote of para. 2.12 No change made
31	3.41	3.32	After "non-permanent equipment" add (portable and mobile) in the same way as Section 3.1(4).					Defined earlier in footnote of para. 2.12 No change made made
32	3.42	3.33	Some plants also use procedures in the mitigatory domain especially in the early phase of a severe accident for actions initiated from the control room before the TSC is functional. Also, new plant designs may consider severe accidents in their design base and could address actions in the mitigatory domain in procedures rather than guidelines . Paragraph 3.42 (and Table 1) should be updated to allow this. It is not clear why procedures in the preventive domain need to contain			Rephrase to use procedure in the early phase of a severe accident for actions initiated from the control room before the TSC is functional.		

			COMMENTS BY REVIEWER			RESC	DLUTION	
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Country/C	Drganizat	ion: South	Africa	Date:				
Comme	Para/I	Line No.	Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for
nt No.						modified as		modification/reject
	Ver1	Ver2				follows		ion
						FO 007		
			details of equipment limitations and			[3.33]		
			benefits. This detail is better dealt with					
			m background documents and training					
			undeted to allow this					
33	3.46	3.40	For procedures in the preventive			The scope is		
55	5.40	5.40	domain some of this detail can be			defined to the		
			contained within background			mitigatory		
			documentation 3.46 should be updated			domain		
			to allow this			domain.		
						[3.40]		
34	3.51		Paragraph 3.51, if viewed in isolation,		Delete due to			
	3.52		no longer reflects international best		redundancy			
			practices in severe accident					
			management. We recommend combing					
			paragraphs 3.51 and 3.52 as follows:					
			"The guidelines should be written in					
			such a way that there is a					
			possibility to deviate from the					
			recommended strategies where this					
			might be necessary or benefic ial.					
			Possible positive and negative					
			consequences of proposed strategies					
			should be specified in the					
			guidelines as a basis for selection of					
			alternative strategies when					
			deviating from the recommended					
			strategies."					
			We do not agree with the second					

			COMMENTS BY REVIEWER			RESOLUTION epted Accepted, but modified as follows Rejected Reason for modification/reject ion Image: Colspan="3">Image: Colspan="3">Resolution Image: Colspan="3">Image: Colspan="3">Image: Colspan="3">Image: Colspan="3">Image: Colspan="3">Image: Colspan="3">Image: Colspan="3">Image: Colspan="3" Image: Colspan="3">Image: Colspan="3" Image: Colspan="3">Image: Colspan="3" Image: Colspan="3">Image: Colspan="3" Image: Colspan="3">Image: Colspan="3" Image: Colspan="3">Image: Colspan="3" Image: Colspa="">"Colspa=""Colspan="3" Image: Colspa			
Reviewer	:		Page of						
Country/C	Drganizati	on: South	Africa	Date:					
Comme	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for	
nt No.			-			modified as		modification/reject	
	Verl	Ver2				follows		ion	
			contones in performent 2.52. The						
			Evaluator should be able to use the						
			guideline in the way it was intended						
			without seeking higher approval for						
			each decision to deviate. The severe						
			accident expertise generally resides						
			with the Evaluator. Please consider						
			deleting the second sentence of 3.52.						
35	3.63	3.58	The first sentence can be deleted. It is			Delete first			
			not always necessary to diagnose why			bullet and			
			equipment failed, simply replace it			modified for			
			with working equipment. The way			clarification			
			3.63 is written forces a utility to waste						
			time trying to understand the reason			[<u>3.58]</u>			
			for the failure rather than treat the						
			symptom and so is detrimental to						
			nuclear safety.						
			Reword the second sentence:						
			"Accident management guidance						
26	2.70	2.70	should include"		D 1' 1				
36	3.70	3.70	The meaning of "several" is "more		Editorial				
			than two". We consider the details		modified				
			expressed in 3.70 to be also applicable		[<u>2</u> 70]				
			to 2-unit sites. Please replace several		[3.70]				
37	3 71	3 71	It is unclear what is meant by "near		Editorial				
57	5.71	5.71	distance" The term "near" is		modified				
			subjective The final sentence is		mounted				
			unclear - consider changing it to		[<u>3 71]</u>				
			uncieur consider enanging it to.						

			COMMENTS BY REVIEWER		RESOLUTION			
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Comme nt No.	Para/Li	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Ver1	Ver2				follows		ion
			" may affect access to operating areas for local actions."					
38	3.73	3.76	Is the "acceptable level" that quoted in INSAG-12 Paragraph 27 namely 1E-5/y for core damage and 1E-6/y for LERF? if so, then quote or reference it. If not using INSAG-12 Paragraph 27 then what is deemed acceptable?			Rephrase the paragraph to define "acceptable level" (i.e. regulatory acceptance criteria or safety goals) [3.76]		
39	3.75	3.78	After "non-permanent equipment" add (portable and mobile) in the same way as Section 3.1(4) to ensure consistency. It is not clear what "should be considered" means as all utilities have done stress tests so this has arguably been completed by all member states as part of that evaluation and so is a superfluous statement. Do you really mean "should be implemented"? What are you wanting a utility to do beyond that already historically performed?		Editorial modified as "should be evaluated"	Rephrase to consider as tasks with high priority [3.78]		
40	3.76	3.78	It is not clear what "should be		Editorial			

			COMMENTS BY REVIEWER			RESC	DLUTION	
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Country/C	Organizati	ion: South	Africa	Date:				
Comme nt No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Verl	Ver2				follows		ion
			considered" means as all utilities have done stress tests so this has arguably been completed by all member states and so is a superfluous statement. Do you really mean "should be implemented"?		modified as "should be evaluated" [3.78]			
41	3.78	3.85	After "non-permanent equipment" add (portable and mobile) in the same way as Section 3.1(4) to ensure consistency.					Defined earlier in footnote of para. 2.12 No change made
42	3.82	3.81	After "non-permanent equipment" add (portable and mobile) in the same way as Section 3.1(4) to ensure consistency.					Defined earlier in footnote of para. 2.12 No change made
43	3.83	3.86	After "non-permanent equipment" add (portable and mobile) in the same way as Section 3.1(4) to ensure consistency.					Defined earlier in footnote of para. 2.12 No change made
44	3.84	3.83	After "non-permanent equipment" add (portable and mobile) in the same way as Section 3.1(4) to ensure consistency. Please delete "to prevent loss of fission product barriers" as this words are superfluous and equipment may also be used to mitigate the failures of the fission product barriers. And surely you do not want to limit "equipment		Editorial modified [3.83]			

			COMMENTS BY REVIEWER			RESC	DLUTION	
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	Ver1	Ver2				follows		ion
			survivability for anticipated conditions" to only the preventative					
			domain.					
45	3.86	3.87 3.88	At the end of the section titled "HARDWARE PROVISIONS FOR ACCIDENT MANAGEMENT", the IAEA should consider adding a subsection on "Multi-Unit Sites" similar to paragraphs 3.23 and 3.24. We suggest that the following			Modified to add 3.85a, 3.85b [3.87, 3.88]		
			 paragraphs be added under this new subsection: Where equipment (including both permanent and non-permanent) is installed for use in accident management, there should be adequate consideration that accidents, including severe accidents, can occur simultaneously on more than one unit at a multi-unit site. The use of a containment venting system that is shared between more than one unit should not have a detrimental impact on the other unit(s). When accident management equipment (northold here. 					
			adequate equipment available for simultaneous deployment to all units					

			COMMENTS BY REVIEWER			RESO	LUTION	
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Comme nt No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Ver1	Ver2				follows		ion
			on site					
46	3.94		- Paragraph 3.94 ends in a semi-		Delete to			
			colon. Does this mean something is		avoid			
			missing or is 3.95 to 3.144 sub-bullets		redundancy			
			of 3.94? Something is wrong with the					
			report layout here.					
47	3.98	3.97	Rather replace "Multi-unit accidents		Editorial			
			should be analysed where applicable"		modified			
			with:					
			"Multi-unit accidents (including multi-		[<u>3.97]</u>			
			unit severe accidents) should be					
			analysed where sites have more than					
			one unit".					
48	3.99	3.103	What is the difference between "a			Rephrase the		
			sufficiently broad set of accident			paragraph in		
			scenarios" used here and paragraph 3.3			consistency		
			which seems contradictory? Should all			with		
			events be considered or only those that			paragraph 3.3		
			are credible? We would suggest that all					
			events and hazards should initially be			[3.103]		
			considered but that those that are not					
			credible can be screened out. Should					
			the same safety assessment criteria be					
			used in the preventive and mitigatory					
			domains?					
49	3.100(3.1	When you state "all initiators are			Merge with		
	1)		represented" clarify whether you mean			3.1		
			including all internal and external			Including		
			hazards or just those that are credible.			challenges to		

			COMMENTS BY REVIEWER		RESOLUTION				
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Comme nt No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject	
	Ver1	Ver2				follows		ion	
			Or are you solely after "internal events"?			safety functions and fission product barriers [3.1]			
50	3.111	3.112	Based on the OE from Fukushima, this paragraph should clarify the possibility of simultaneous severe accidents : "Adequate staffing levels and personnel qualifications should be established for implementation of accident management measures taking into account the possibility that multiple units can be affected simultaneously, including simultaneous severe accidents, and taking into account the requirements for emergency response."		Modified to make clear [3.112]				
51	3.118	3.120	The use of low quality water into the Steam Generators of a PWR can be just as controversial. Please change "or injecting low quality water into the reactor without" to : " or injecting low quality water into the reactor vessel (or steam generators) without"			Modified to add steam generator [3.120]			
52	3.136	3.135	The last sentence is unclear. It could be interpreted that a member of the TSC			Modified to make clear			

			COMMENTS BY REVIEWER			RESO	LUTION	
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Country/Or	rganizati	on: South	n Africa	Date:				
Comme nt No.	Para/Li	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Ver1	Ver2				follows		ion
			needs to go on to site take measurements and come back to the TSC and record it which is surely not your intent. We suggest explaining more clearly what you mean					
53	3.138	3.138	We propose that the sentence should rather read: "The technical support centre should be designed to withstand all credible external hazards". As it currently reads it requires the TSC to be able to withstand all hazards including a direct strike by a large meteor which is not possible			Rephrase paragraph including extreme external hazards [3.138]		
54	3.142		It is not clear what is meant by "an existing exposure situation". This paragraph should be revised to make the meaning clear			Delete		
55	3.152	3.148	After "non-permanent equipment" add {portable and mobile) in the same way as Section 3.1(4) to ensure consistency. How does the last sentence of 3.152 differ from 3.85? Consider deleting the last sentence in 3.152					Modified the phrases The definition of non-permanent equipment is already defined as portable and mobile No change made [3.148]

			COMMENTS BY REVIEWER			RESO	LUTION	
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Comme nt No.	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Ver1	Ver2				follows		ion
56	3.155	3.152	Please delete "supported by appropriate means, such as desktop training or adequate simulation tools" as this can be interpreted to remove the requirement for drills and it doesn't add value anyway			Modified phrase and add footnote for "tabletop exercise"		
57	3.160	3.157	After "non-permanent equipment" add (portable and mobile) in the same way as Section 3.1(4) to ensure consistency					Modified the phrases The definition of non-permanent equipment is already defined as portable and mobile No change made
58	3.168	3.166	After "non-permanent equipmenf add (portable and mobile) in the same way as Section 3.1(4) to ensure consistency. The way the sentence is structured is confusing. The sentence should be reworded to improve the meaning. We suggest: "The effect of any changes to the plant design, changes to the available non- permanent equipment (portable and mobile) or changes to the operating organization/utility should be			The definition of non- permanent equipment is already defined as portable and mobile Modified phrase for clarification		

			COMMENTS BY REVIEWER			RESC	DLUTION	
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Country/C	Organizati	on: South	Africa	Date:				
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	Ver1	Ver2				follows		ion
			evaluated for any impact on the accident management programme."			[3.166]		
59	3.169	3.167	Replace "operating organization" with "operating organization/utility" to align with the wording in 3.171					'operating organization includes utility in IAEA Safety Glossary <u>No change made.</u>
60	3.171	3.169	Replace "value" with "impact". Value can refer to cost which is not appropriate in this context.		Modified			
61	3.173	3.171	Replace "operating organization" with "operating organization/utility" to align with the wording in 3.171.					Consistency with IAEA safety glossary No change made.
62	3.174	3.172	Replace "operating organization" with "operating organization/utility" to align with the wording in 3.171					Consistency with IAEA safety glossary No change made.
63	4.1	4.1	The meaning of the word "global" in this context is "worldwide" which is incorrect. We suggest you rather use "overall". After "Number of affected units" we suggest you add "(reactors and spent		Modified [4.1]			

			COMMENTS BY REVIEWER			RESOL	JUTION	
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Comme nt No.	Para/L	line No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/reject
	Ver1	Ver2				follows		ion
			fuel pools)".					
64	4.3	4.3	While we agree that the			Modified		
			recommendations should be					
			documented, we do not agree that			[4.3]		
			written forms must be used to					
			communicate with the decision maker.					
			We believe Human Performance tools					
			used in the Preventative domain such					
			as 3-way communication can also be					
			applied in the Mitigative domain. we					
			"Becommendations should be					
			presented by the technical support					
			centre to the decision maker, who will					
			decide on the course of actions to be					
			taken Records of all recommendations					
			should be kept."					
65	4.8	4.9	The terminology used to describe the			Modified to be		
			final decision maker should be revised			consistency		
			and made consistent with paragraphs			with 3.118 and		
			3.118 and 3.124			3,124		
						[4.9]		
66	4.9	4.10	This paragraph should be clarified to			Modified to		
			assign highest priority to the final			maintain the		
			fission product barrier that prevents			containment		
			tission product releases. For example,			integrity and		
			it may not be always be warranted to			avoid		
			steam through a ruptured SG just to			containment		

			COMMENTS BY REVIEWER			RESO	LUTION	
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Country/C	Country/Organization: South Africa Dat							
Comme Para/Line No.			Proposed new text	Reason	Accepted	Accepted, but	Rejected	Reason for
nt No.						modified as		modification/reject
	Ver1	Ver2				follows		ion
			prevent vessel failure.We recommend			by passes		
			changing the final sentence to:			during		
			"In principle, priority should be			accident		
			assigned to the actions that address			conditions		
			imminent threats to the integrity of the					
			final fission product barrier."			<mark>[4.10]</mark>		

11 Comments of USA

DS483 – Safety Guide: Severe Accident Management Programmes for NPPs

Reviewer: Country/C	COMMENTS BY REVIEWER eviewer: U.S. Nuclear Regulatory Commission puntry/Organization: United States of America Date: December 2015					RESO	LUTION	
Comme nt No. / Reviewe	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rej
r	Verl	Ver2				follows		ection
1	1.6 / 2	1.7	"causing long-term off-site contamination."	This implies that any contamination shorter than long-term is acceptable.	Modify item (2)			
2	1.6/6	1.7	"mitigative" not "mitigatory"	Standard use is preventive and mitigative. Please change wherever the word "mitigatory" is used in the document.				IAEA Safety Glossary is defined as "mitigatory". No change made.
3	1.6, Table 1	Table 1	Aim Objective	Clarity	Editorial modified			
4	1.6, Table 1	Table 1	Under the "Preventive domain" column for "Use of equipment" is the term "design margins" that is not defined.	Define in a footnote to the table as to what is meant by "design margin".		Delete footnote		
5	Table 1: use of equipme nt	Table 1	"Use of all available systems within their design margins;"	The phrase is not clear as written.		Rephrase to be clear		
6	1.7	1.8	while already the design	Clarity		Rephrase to clear		

Reviewer Country/C	: U.S. Nucl Drganization	lear Regula n: United S	COMMENTS BY REVIEWER tory Commission tates of America Date:		RESO	LUTION		
Comme nt No. /	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rei
Reviewe r	Ver1	Ver2		Reuson	necepted	follows	Rejected	ection
7	1.8 / 1	1.9	all possible conditions	Remove absolute	Editorial modified	[1.8] Rephrase to clear [1.8]		
8	1.8/6	1.9	This infrastructure should include equipment and supporting procedures necessary to respond to events that may affect multiple units on the same site and last for extended periods, and personnel having adequate skills for using such equipment and implementing supporting procedures. Adequate multi-unit staffing plans should be developed.	Adequate staffing plans should be developed to account for multi-unit events for extended periods of operation. Adequate and available emergency communication equipment should be available for emergency response organizational staff to effectively communicate during extended power outages.		Modify to rephrase to be clear [separate from 1.8a] [1.9]		
9	1.9 / 3-6	1.10	Make the font size the same in the paragraph	Editorial	Editorial modified			
10	2.10, Footnot e 9, pg 8, line 2	2.10	"containment/confinement integrity"	Editorial. A space is missing between "confinement" and "integrity".		Delete footnote		
12	2.11	2.11	severe fuel damage	Broader scope	Editorial modified			

Reviewer: Country/C	U.S. Nucle Organization	ear Regula : United S	COMMENTS BY REVIEWER atory Commission States of America Date:		RESOI	LUTION		
Comme nt No. /	Para/Li	ne No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rej
r	Ver1	Ver2	L.			follows	5	ection
					[2.11]			
13	2.12 / 1	2.12	Suitable and effective accident management measures should be derived from the strategies.	Editorial, to make the sentence more clear	Editorial modified			
14	2.15 / 2	2.14	Replace "working conditions" with "harsh environments"	More accurate descriptor	Editorial modified			
15	2.18	2.18	maintained as appropriate during	May need to pass a hose	[2.14] Editorial			
15	2.10	2.10	all phases of accident	through a security door and leave door ajar, e.g.	modified			
16	2.19 / 1	2.19	Accident management guidance, which includes guidance for management of severe accidents, should be developed for all physically-identifiable challenge mechanisms (regardless of their probabilities of occurrence), to minimize their impacts on public health and safety.	Makes the statement more clear.	Editorial modified [2.19]			
17	2.22 / 2	2.21	"arrangements <u>and-defined in</u> <u>be coordinated with</u> the plant's Emergency Plan."	Change from requiring arrangements to be contained within Emergency Plan to coordination. Accident management guidance can be separate from emergency	Editorial modified [move to 2.19b] [2.21]			

Reviewer: Country/C	U.S. Nucle Organization	ear Regula : United S	COMMENTS BY REVIEWER atory Commission states of America Date:		RESOI	LUTION		
Comme nt No. / Reviewe	Para/Li	ne No. Ver2	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rej ection
r				response so long as it is properly coordinated.				
18	2.24	2.30	where several <u>multiple</u> units on the same	Accidents may affect more than one unit on a site. "Several" may imply more than two.	Editorial modified			
19	3.6/4	3.4	Delete the last sentence: "In this process, even highly improbable failures should be considered."	A good PSA would screen out such highly improbable failures.		Modified to add footnote for giving examples of this case		
20	3.26 (5) / 1	2.21	Rephrase as follows: Conditions should be determined under which accidents could occur when the facility is in a shutdown state, particularly when the containment barrier is temporarily not available.	Clarification		Editorial modified [move to 2.19b (5)] [2.21 (5)]		
21	3.27 / 1	3.17	The capabilities <u>ability</u> of plant personnel to contribute to <u>successfully perform</u> unconventional measures to mitigate	The existing wording ("capabilities" and "contribute") frame the statement as if it is highly likely that staff can successfully perform	Editorial modified [3.17]			

Reviewer: Country/C	U.S. Nucl Organizatior	ear Regula n: United S	COMMENTS BY REVIEWER tory Commission tates of America Date:	December 2015		RESOI	LUTION	
Comme nt No. /	Para/Li	ne No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rei
Reviewe r	Ver1	Ver2			P	follows	;	ection
	2 07 / 7	2 17	After " accordingly," add. The	unconventional measures. The suggested wording frames this statement in a more realistic way. It should never be assumed that operators can commit extraordinary unconventional acts, especially when environmental factors are extremely challenging.		Dombrooce to		
22	3.2777	3.17	After "accordingly." add: The procedures associated with such actions should contain a warning in the introductory section that defines the potential risk(s) to health, safety of the procedure user(s), and any protective actions which should be taken.	Procedures are not perceived as voluntary; therefore, exceptions to this operating philosophy should be emphasized in a way that allows proper consideration prior to execution of the procedure.		Rephrases to allow proper		
23	3.33	3.22	Footnote 34 is incorrectly numbered as 36.	Editorial	Delete footnote			
24	3.34 / 4 th bullet	3.24	Rephrase as follows: Adequacy of a strategy; some strategies could be adequate to prevent a severe accident, but not to mitigate the accident	Clarification		Separate as 3.34a and rephrase to add in fourth bullet		

Reviewer: Country/C	COMMENTS BY REVIEWER eviewer: U.S. Nuclear Regulatory Commission puntry/Organization: United States of America Date: December 2015					RESO	LUTION	
Comme nt No. /	Para/Li	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rei
Reviewe r	Ver1	Ver2		Readon	Treepted	follows	Rejected	ection
			following core damage, due to changing priorities ³⁸ .			[3.24]		
25	3.56/3	3.51	Specific and measureable parameter values should be defined for the transition from-		Editorial modified			
			the preventive domain to the- mitigatory domain to the use of SAMGs.		[3.51]			
26	3.55 / 7	3.49 3.50	Add: "Protocols for communicating with various stakeholders when the transition point has been met/exceeded should be carefully considered. Steps should be taken to ensure that all personnel understand how their roles are about to change during the transition."	The shift from the preventative domain to the mitigatory domain is important. All staff should be aware of any potential changes to their roles.		Modified to add 3.55a [3.49, 3.50]		
27	3.70/6	3.70	"whether or not the neighbouring operating units at the same site should be shut down."	Clarity on "neighbouring units." These are different than those in 3.71.	Editorial modified			
28	3.71	3.71	"When the neighboring units at the near distance are in accident condition"	Unclear. What are units that are "at the near distance"? Neighboring nuclear units within 10 miles? Within 50 miles?	Editorial modified [3.71]			
29	3.76	3.80	- basemat melt-through by	This is another key		Modified to		

Reviewer Country/0	COMMENTS BY REVIEWER viewer: U.S. Nuclear Regulatory Commission untry/Organization: United States of America Date: December 2015					RESO	LUTION	
Comme nt No. /	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rei
Reviewe r	Ver1	Ver2	r toposed new text	Reason	necepted	follows	Rejected	ection
	bullet 7,		molten corium. Consider adding: - corium – concrete interaction, leading to hydrogen production	challenge.		add examples in separated para. 3.76a		
30	3.79	3.61	causing long term off-site contamination	This implies that any contamination shorter than long-term is acceptable.		Delete due to redundancy with 3.80 [3.80 moves to 3,65a] [3.61]		
31	3.85	3.87	taking into account the safety significance of such equipment	All equipment to be used in accident management should be subject to maintenance, testing and inspection procedures.	Editorial modified [3.87]			
32	3.102 / 9th bullet	3.106	Define the term "SAM"	This is the first use of "SAM" and it should be spelled out (e.g., Severe Accident Management).	Modified for editorial correction [3.106]			
33	3.111	3.112	possibility that multiple <u>all</u> units can be affected simultaneously	Clarity	Modified for clarity			
34	3.116/4	3.117	"The effects of a station black	A highly reliable		Modified to		

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Comme nt No. /	Para/L	ine No.	Proposed new text	Reason	Accepted	Accepted, but modified as	Rejected	Reason for modification/rei
Reviewe r	Ver1	Ver2				follows	10,0000	ection
			out <u>and the potential for damage</u> <u>from external events</u> on the communication equipment should be considered."	communications network needs to be able to function even during extreme conditions such as 500 year and 1000 year storms and floods. This guidance should be worded more strongly than "considered."		add "extreme external hazards" [3.117]		
35	3.134 / 5	3.134	After "should be specified," add: Methods for aiding oral communication, such as "repeat- backs" and the use of military- style alphabets should be implemented if not already in use.	This adds another barrier against miscommunication.		Add to the paragraph [3.134]		
36	3.134 / 6-8	3.134	DS483 states: "Oral communication between the technical support centre and the control room staff should be done by a member of the technical support centre who is a licensed operator or similarly qualified person." Implied but not stated is that <u>direction to</u> <u>operators may only be done by or</u> <u>through licensed personnel.</u>	To clarify why the TSC communicator must be licensed, and to more clearly state the command structure for SAM.		Add to the paragraph [3.134]		
37	3.141 / 3	3.139	"should be described in this coordinated with the emergency	Responsibilities for accident management need		Rephrase to modify the		

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Comme nt No. / Reviewe	Para/L	ine No. Ver2	Proposed new text Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rej ection	
r			plan"	only be coordinated with emergency plan and not described within it.		paragraph		
38	3.143 / 6	3.139	"review might recommend changes to the emergency plan <u>or</u> <u>accident management</u> <u>programme</u> to eliminate such conflicts.	Conflicts identified during the review may be more appropriately resolved by changes in the accident management programme rather than the emergency plan.	Modified	Rephrase to combine with 3.141 [3.139]		
39	ANNEX III	Annex 1-3	Replace "SAM" with "SAMGs" throughout this annex.	The more common terminology is SAMGs, not SAM. Also, there are places in the annex where "SAM guidance" is used instead of SAMGs."	Modified to replace with SAMGs			

12 Comments of ENISS

DS483 – Safety Guide: Severe Accident Management Programmes for NPPs

			COMMENTS BY REVIEWER			RESOL	UTION	
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Comm ent No.	Comm Para/Line No. ent No.		Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rej ection
1	Gener al Com ment	2.7	General comment concerning terminolog. The report uses different terms such as ex- external hazards to mean the same thing. e.g. by using term "external hazards" to n weather conditions, earthquakes, external hazards (such as explosive and toxic gas of Footnote n°21, 30, 33)	y: ttreme external events and The usage should be unified, nean consistently all extreme fires and floods, man-made clouds, oil-spills) etc. See		Add Footnote to define the definition in 2.8 [2.7]		
2	1.7	1.8	Effective implementation of <u>mitigative</u> actions and dedicated organization (also called severe accident management <u>programme</u>) is done in existing plants through a the accident management programme (hereinafter referred to as "accident management programmes") while already the design of new nuclear power plants explicitly includes the consideration of severe accident scenarios and strategies for their management.	The AMP is not exclusively constituted by a Severe accident programme: the SAMP is included into an AMP that covers also the preventive phase. See recommendation n°19 of SSR2/2 or §1.4 of NS- G2.15 step 8.		Rephrase the paragraph to be clear [1.8]		
3	Table 1	Table 1	Role of the Technical Support Centre in mitigatory domain: "or decision making for complex tasks, if deemed appropriate."	Typically the TSC assumes a more authoritative role as accident conditions deteriorate or becomes more complex.	Editorial modified to be clear			

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				The TSC ought to take a stronger role as decision making during the mitigatory domain.				
4	Table 1	Table 1	Limitation of release of radioactive material into the environment through actions <u>preventing the uncontrolled loss</u> <u>of containment integrity and limiting</u> <u>fission product releases to the</u> <u>environment.</u> -comprising termination of core/fuel melt progression, maintenance of reactor pressure vessel integrity, maintenance of containment integrity, preventing containment by pass and control of releases	Objectives of terminating the progress of fuel damage and maintaining the integrity of reactor vessel are intermediate objectives. As it is written in §1.6, main objectives in severe accident are to maintain the containment integrity and to limit any fission product releases. So intermediate objectives are valid only if they do not prevent the subsequent ones to be achieved.		Modified to rephrase to be clear		
5	2.6 footn ote 5	2.4	avoid or reduce undesirable consequences. For the purpose of protection, the International Commission on Radiological Protection recommended reference levels for emergency exposure	Missing punctuation ""		Rephrase the paragraph in consistency with GSR Part 7 [2.4]		
6	2.11	2.11	Multiple strategies should be identified, evaluated and, when appropriate, developed to achieve the accident management objectives, including: -Preventing severe fuel damage;	This clause is further developed in clause 3.30 and following, and include evaluation (3.32) and prioritized (3.34), and only		Editorial modified [2.11]		

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No.						follows		ection
			 Terminating the progress of fuel damage once it has started and maintaining the integrity of reactor vessel to prevent melt through; Maintaining the integrity of the containment and preventing containment by-pass; Minimizing releases of radioactive material, including releases from any source of radioactive material outside containment; and Achieving a long term safe stable state. 	a part of them are to be implemented (3.37). Therefore, for clarity, development of all possible strategies is not necessary, notably in the case these strategies have adverse effects. In particular, objectives of terminating the progress of fuel damage and maintaining the integrity of reactor vessel are intermediate objectives that in some design, cannot be demonstrated or may preclude achievement of the main objectives in severe accident. As it is written in §1.6, they are to maintain the containment integrity and to limit any fission				
7	2.19 2	2.19	2.19 Accident management guidance, including guidance for management of	product releases.When the probability isvery low, events may be	Editorial modified			
			severe accidents, should be developed	considered as practically				
			for all physically identifiable challenge	eliminated, and nothing is	[2.19]			
			mechanisms to minimize the impact on	required for these				
			public health and safety, for which the	situations. However the				
			development of such guidance is	documentation may cover				

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ent						modified as	-	modification/rej
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			practicable. Accident management	part of these situations (it is				
			guidance should be developed	frequently the case for				
			irrespective of the probability of	instance with symptom				
			occurrence of the challenges even for	based procedures or				
			challenges of low probability of	guides).				
			occurrence.	But in this case, the				
			The level of guidance and associated	demonstrations				
			demonstration should be commensurate	recommended in the guide				
			to the safety objectives. In particular, if	should not apply as it would				
			procedures and guidance cover	require an undue amount of				
			management of more situations that	work				
			those selected to be part of design basis					
			and design extension conditions, no					
			demonstration of efficiency is needed.					
8	2.24	2.30	Adequate staffing and working	"Habitability" does not	Editorial			
			conditions habitability should be	seem appropriate in this	modified			
			ensured for managing accidents,	context.				
			including those resulting from external		[2.30]			
			hazards. Accident management should					
			consider that some rare events may					
			result in similar challenges to all units					
			on the site. Therefore plans for defining					
			staffing needs should take into account					
			situations where several units on the					
			same site have been affected					
			simultaneously and some plant					
			personnel have been temporarily or					
			permanently incapacitated.					
			Contingency plans should be prepared					
			to provide alternate personnel to fill the					

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ent						modified as		modification/rej
No.						follows		ection
			corresponding positions in case of					
			unavailability of staff.					
9	2.27	2.32	The approach in accident management	Possible combinations of		Modified to		
			should be, as far as feasible, based on	loss of indications may lead		add for		
			either directly measurable plant	to a very complex set of		clarification		
			parameters or information derived from	guidelines, with, in some				
			simple calculations ¹³ and should	cases, real difficulties to		[2.32]		
			consider the loss or unreliability of	manage the situation when				
			indication of key plant parameters that	the essential plant				
			have not been designed against extreme	parameters are lost. This				
			events.	goes far beyond SSR 2.2				
				requirements. It appears				
				more effective to make				
				essential plant parameters				
				robust against extreme				
				events and such possibility				
				could be taken into account				
				in this guide (see proposal).				
10	2.31	2.37	When adding or upgrading equipment	Addition of a global		Modified to		
			or instrumentation is contemplated,	sentence for the		add for		
			related design requirements should be	consideration of external		clarification		
			such that there is reasonable assurance ¹⁶	events.				
			that this equipment or instrumentation	At the end, the disposition		[2.37]		
			will operate as intended under the	should not hinder the				
			anticipated environmental conditions	installation of equipment				
			present when it should be used and is	dedicated to severe				
			either demonstrated by equipment	accidents (due to too many				
			qualification or by assessment of the	prescriptions).				
			survivability ¹⁷ . The equipment should					
			be designed against accident					

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ent						modified as		modification/rej
No.						follows		ection
			conditions/loads for severe accidents					
			and external hazards, commensurate					
			with the function that is to be fulfilled					
			and provide adequate margin to failure					
			when it is expected to operate.					
			The equipment should be independent,					
			as far as practicable, from other					
			existing systems during accident					
			conditions.					
			The external events should be					
			considered when adding or upgrading					
			an equipment or instrumentation.					
11	2.31	2.37	When addition or upgrade of equipment	Editorial		Modified to		
			adding or upgrading equipment or	Confusing text – long		add for		
			instrumentation is contemplated, related	phrase		clarification		
			design requirements should be such that					
			there is reasonable assurance that this			[2.37]		
			equipment or instrumentation will					
			operate as intended under the					
			anticipated environmental conditions					
			present when it should be used and is					
			either demonstrated by equipment-					
			qualification or by assessment of the					
			survivability 17. The contemplated					
			equipment or instrumentation					
			operability under the anticipated					
			conditions should be either					
			demonstrated by equipment					
			qualification or by assessment of the					
			survivability.					

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ent						modified as		modification/rej
No.		1				follows		ection
12	2.33	2.42	The installation of new equipment or	Some new equipment could	Editorial			
			the upgrading of existing equipment to operate	be design to withstand severe accident and external	modified			
			under harsh environmental conditions	events. Such a sentence	[2.42]			
			does not eliminate the possibility to	would have a detrimental				
			need for the development of the	effect on tentative to qualify				
			accident management guidance for the	equipment.				
			situation when some of this equipment					
			malfunctions.					
13	2.34,	2.40	18 Examples of justification and use of	This type of example seems	Delete footnote			
	footn		portable (non-permanent) equipment-	not appropriate in a safety				
	ote 18		can be found in United States of	guides as it refers to a	[2.40]			
	Redu		America developed extensive damage	national regulation with no				
	ndanc		mitigation guidelines (EDMGs) which-	precise reference.				
	y with		were developed the reflect to B.5.b	More generally references				
	footn		requirements and the Flexible Coping-	to documents should be				
	ote 24		Strategies (FLEX) which were a	precise and should be				
			strategy developed following the	reflected in the "references"				
	0.40		Fukushima Danchi accident.	section of the document	D 1 0			
14	2.42	2.50	Please add a reference that provides	The reader would benefit	Delete footnote			
			further guidance for situations that	from getting advice on how				
			result in loss of command and control	to develop guidance for the	[2.50]			
			structures.	case of loss of command				
			Nesley English Institute NELOC 12	and control.				
			Nuclear Energy Institute, NEI 06-12 "D 5 h Dhaga 2 %2 Submittal Cuidaling					
			B.5.0 Phase 2&5 Submittal Guideline					
15	3.4	2.2	(2000) In the proventive domain the selection	Should be clear that this			In Section 2	
15	5.4	5.5	of events	recommendation addresses			all prevent	
				the preventive domain			domain	
				the preventive domain.			uomam	

			COMMENTS BY REVIEWER		RESOLUTION Accepted Accepted, but modified as follows Rejected Reason for modification/rej ection			
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INO.						Ionows		ection
							aspects are removed	
							[3.3]	
16	3.5		Please add precise relevant reference regarding the usage of Extensive	3.5 mentions EDMG as a footnote: "For example,		Delete EOP scope		
			Damage Mitigation Guidelines	Extensive Damage				
			(EDMGs)	Mitigation Guidelines				
				(EDMGs) in the United				
				States of America." It				
				would be opportune to add				
				a relevant reference (one				
				should not mentioned a				
				giving a reference)				
17	3.5		Actions used in preventive accident	To consider utilities which		Delete EOP		
			management should be included in	include external hazards		scope		
			EOPs, and, in case of external hazards,	management into their				
			could further be detailed by special	EOPs without dedicated				
			procedures designed for this purpose.	procedures.				
18	3.6	3.4	3.6 "Accident Management guidance	Idem modification included		Delete		
6			should address the full spectrum of	for §2.7.		footnote		
footnot			challenges to fission product barriers,	Also one could find in the				
e			hordware feilures, human amore and	challenges the meteorite		[<u>2</u> 4]		
			external bazards, and possible	rail, that has a very low probability $(10^{-10} \text{ or less})$ of		[<mark>3.4]</mark>		
			consequential failures and physical	occurrence and for which it				
			phenomena that may occur during the	is not reasonable to develop				
			COMMENTS BY REVIEWER			RESOLU	JTION	
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ent						modified as		modification/rej
No.		1				follows		ection
			evolution of a severe accident. In this	a guideline.				
			process, even highly improbable	It should be possible to				
			failures of low probability of	define a cut off frequency to				
			<u>occurrence</u> should be considered.	credible.				
19	3.9	3.1	• Integration of the accident	Removal of "evaluation of		Combined		
			management programme within the	personal skills": this should		with 3.1		
			emergency arrangements for the plant;	be considered for NPP staff				
			• Verification and validation of	as a whole but not				
			procedures and guidelines;	specifically in the frame of				
			• Education and training, drills and	the development of the				
			exercises and evaluation of personnel	accident management				
			skills ;	programme.				
			• Supporting analysis for the	It appears not necessary to				
			development of the accident	evaluate the skills of the				
			management programme;	to aducation training drills				
				and evercises as the				
				necessary skills are ability				
				to use the procedures and				
				guidelines.				
				6				
20	3.15	3.5	Accident management programmes	Delete para. 3.15, it is too	Deleted due to			
			should assess whether all important	general. Identification of	redundancy			
			challenges to fission product	challenges is already	with phrases in			
			boundaries have been addressed,	addressed in Chapter	3.7			
			including those resulting from external	"Identification of plant				
			hazards.	vulnerabilities", para 3.17 –	[3.5]			
				5.24.				
1	1					1		

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ent						modified as		modification/rej
No.						follows		ection
21	3.22		The information regarding the plant-	Repetition.	Deleted due to			
			behaviour in accident conditions should	Already mentioned in 2.26,	redundancy			
			be obtained using appropriate analysis.	3.2, 3.7 and 3.9				
			Other inputs should also be used, such					
			as the results of research on severe-					
			accidents, operational experience					
			including insights from other plants-					
			andengineering judgment.					
			Consideration should be given to-					
			uncertainties in the severe accident					
			knowledge base and the assumptions					
			made in models and analysis.					
22	3.31	3.20	In the mitigatory domain, strategies	To be consistent with	Editorial			
			should be developped identified with	proposal on §2.11 which is	modified but			
			the objectives of:	developed in 3.30 to 3.41.	keep			
				Identification is the first	"preventing re-			
			 Preventing re-criticality; 	step of the process	criticality"			
				Prevention of re-criticality	because			
				should not be an objective	reactivity			
				in itself: re-criticality (but	control is a			
				also hydrogen detonation,	function of			
) should be avoided to	fundamental			
				fulfill the other objectives.	safety function			
				It should consequently be	5			
				removed.	[3.20]			
23	3.31	3.20	Footnote 34 missing, and footnote 36	Wrong numbering of the	Delete footnote			
			appears before footnote 35.	footnotes				
					[3.20]			
24	3.36	3.27	The implementation of specific	The reliability of threshold		Editorial		

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			mitigatory strategies should be triggered when certain parameters reach their threshold values by threshold values or by observing trends of significant parameters. These parameters should be selected to be indicative of challenges to fission product barriers.	values could be very uncertain in the mitigatory domain. In some cases it is better to emphasize trends here instead. The proposal is consistent with paragraph 3.91 where it is stated that trending may be more important than the accuracy of the indicated values.		modified for clarification [3.27]		
25	3.37	3.28	If strategies are considered to be implemented within a certain time window, the possibly inherited large uncertainties should be taken into account in identifying such a window. However, care should be exercised in order not to discard potentially useful strategies.	Editorial	Editorial modified [3.28]			
26	3.40	3.31	Strategies which avoid or minimise the accumulation of large amounts of potentially contaminated water, including leakage from a failed containment should be preferred. <u>Cooling of the corium should, however,</u> <u>always be higher prioritized than</u> <u>minimization of the amounts of added</u> <u>water.</u> Strategies for storing and remediating accumulated contaminated water should be considered in an	It is important to state that nothing must prevent personnel from providing necessary amounts of cooling water to the corium.		Editorial modified and add to footnote [3.31]		

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			appropriate manner.					
27	3.42	3.33	The strategies and measures selected discussed in the previous section should be converted to procedures for the preventive domain (EOPs) and guidelines for the mitigatory domain (SAMGs).	In the previous section, part of the strategies discussed are not selected. They do not need to be converted to procedures	Editorial modified [3.33]			
28	3.62	3.57	Procedures and guidelines should contain guidance for situations where the preferred accident management equipment <u>that has not been design or</u> <u>verified to withstand such conditions</u> may not be available. Alternate methods for achieving the same purpose should be explored and, if available, included in the guidance.	Some new equipment could be design to withstand severe accident and external events. Such a sentence would have had a detrimental effect on tentative to qualify equipments.		Rephrase to add the qualification of equipment and cases of failure [3.57]		
29	3.64	3.59	Recovery of unavailable equipment should be factored into accident management <u>procedures</u> guidance .	Typically the term "guidance" is used in the mitigatory domain and "procedures" are used in for preventive actions. As such, "accident management guidance" ought to be replaced with "accident management procedures".				Guidance includes procedures and guidelines defined in 2.10 No change made. [3.59]
30	3.66, footn ote 53	3.62	Examples are provided in Appendix III of Ref. [15] or by the technical support- guidelines (TSGs) developed by the BWR Owners Group.	References in safety guides should be precise and accessible to any reader.		Delete footnote due to referred in Ref. [17]		

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ent						modified as		modification/rej
No.						follows		ection
21	2.75	2.70				[3.62]		
31	3.75	3.78	For existing plants, providing non-	For new plants, SSR 2/1		Modified as an		
			permanent on- or off-site equipment	widely promotes use of		option for exist		
			(reasonably protected against external	The sector of th		plant		
			nazards) <u>may should be an the preferred</u>	I herefore this option is		<mark>[2 70]</mark>		
			option to enhance the preventive plant	evicting plants. In some		[3./8]		
			capabilities.	existing plants. In some				
				cases int should be				
				case there is a limited time				
				for use of non permanent				
				equipment for better				
				behavior in Severe accident				
				conditions and external				
				event Non permanent				
				equipment could not be the				
				only solution for such				
				management.				
32	3.76	3.80	In particular, equipment upgrades	This paragraph is too	Editorial			
			which increase capability or margin to	ambitious concerning the	modified			
			failure for the following functions	instrumentation that has to				
			should be taken into account evaluated:	withstand SA conditions	[3.80]			
			Monitoring key containment	(control of combustible gas,				
			parameters such as temperature,	fission product, in				
			pressure, radiation level, hydrogen-	containement water				
			concentration, and water level;	level). Some				
				recommendations couldn't				
				be followed taken into the				
				state of the art (ex: control				

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ent						modified as		modification/rej
No.						follows		ection
				of fission product during a				
				severe accident).				
				Hydrogen concentration				
				cannot be considered as a				
				key parameter in every case				
				as risk of explosion depends				
				on concentration of				
				hydrogen, other				
				combustible gases, but also				
				oxygen and steam. What is				
				important is control of				
				combustible gases, already				
				addressed by 5 th bullet, and				
				which may need				
				instrumentation.				
				Note that the meaning of				
				"key" in this context is not				
				so clear. Is it the same that				
				"essential" in 3.86. If yes				
				please harmonize				
33	3.80	3.61	(3) An alternate means of venting the	Editorial		Delete item (3)		
			containment if rupture disks are	The two sentences of 3.80				
			installed that could inhibit venting	(3) seems independent		[move to		
			when required.	(Or clarify)		3.65a]		
			(4) The preferred option should be to					
			vent using a pathway that is likely to			[3.61]		
			provide some reduction of fission					
			product release					
34	3.85	3.86	Maintenance, testing and inspection	Term "safety significance"	Editorial			
			procedures should be developed for	is not used for SAMG	modified			

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ent					modified as		modification/rej
No.					follows		ection
		equipment to be used in accident	measures in some countries,	10 0 1			
		management taking into account the	at least in Germany.	[3.86]			
		safety significance the importance of					
25	2.09	such equipment.	Tee muserintine , serves		Dalata		
33	5.98 footn	Potential radiological consequence	too prescriptive : source		Delete		
	IOUII ota 66	doses	from level 2 PSA (which is				
	010 00	uoses.	required) and dose				
			assessment is resulting form				
			level 3 PSA (which is				
			usually not required). The				
			footnote should be				
			removed.				
36	3.118 3.119	Responsibilities and authorities for	The difficulty is similar		Delete		
		implementation of certain accident	with injection of low		footnote due to		
		management actions with a potentially	quality water in SFP or in		too specify		
		significant impact ² should be	SGs				
		established in the entire emergency			[3.119]		
		response organization. The emergency	Generally, it is required that				
		response organization could include	SFP is not critical even in				
		elements as depicted in Figure. 2. The	clear water				
		with clearly assigned decision making					
		authority) should have the authority to					
		take any necessary actions to mitigate					
		the event including venting					
		containment or injecting low quality					
		water into the reactor without the need					
		for external authorization73-					
		72 For example, containment venting or					

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ent			•		•	modified as	U	modification/rej
No.						follows		ection
			use of un-borated water for injection to					
			a PWR core-and/or spent fuel pool-					
			(SFP)					
37	3.122	3.128	When transferring responsibilities, and	Paragraph dedicated to the		Deleted due to		
		3.129	decision making authority, impact of	transfer of responsability		redundant with		
			external hazards should be considered,	redundant with 3.128 and		3.128 and		
			in particular, when placing the decision	3.129.		3.129.		
			making authority for accident-					
			management at both on-site and off-site			[3.128, 3.129]		
			locations.					
38	3.152	3.148	All Equipment needed identified in the	Introduction of possibility		Add guidance		
		3.149	accident management programme,	to graduate the		on testing for		
			including portable and mobile	recommendation according		non-permanent		
			equipment, should be analysed or	to the safety importance of		equipment in		
			tested, or other reasonable means used,	equipment.		3.152a		
			accordingly with the importance of the	Test is possible only for				
			equipment for contributing to the main	equipment which can be put		Delete		
			safety functions, to verify that	on a test bench. That is not		footnote due to		
			performance conforms to the	the case for instance for the		avoiding		
			requirements.	piping and associated		redundancy		
			Testing should include the equipment	equipments where analysis				
			and the assembled subsystem needed to	is the only mean.		[3.148-3.149]		
			meet the planned performance. Tests	The term "requirements" is				
			should include needed local actions,	too prescriptive for all				
			contingencies, and its proper	equipment.				
			connection to plant equipment, access	The term "if possible" is				
			to the site, off-site actions, multi-unit	added for what should				
			events, emergency lighting, etc., and	include the tests: the list is				
			the time needed for these actions, if	very prescriptive and may				
			possible. Guidance should be provided	not be feasible practically.				

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No.					follows		ection
		for maintenance and periodic testing to	The evaluation of				
		assure proper functioning.	equipment should be				
		appropriate	performed only for				
		90 Environmental conditions including	equipments that are claimed				
		temperature, pressure, humidity,	in the safety demonstration,				
		radiation, chemicals will vary greatly-	even extended to the more				
		with the time and	probable severe accidents				
		location so that the equipment-	(which correspond to the				
		important to safety must be established	requirements of SSRs). This				
		for the most severe design basis-	corresponds to the need to				
		accident.	ensure a more robust				
			response to the most				
		(footnote 22 redundancy)	frequent events. Other				
			equipment may be used, but				
			in this case no verification				
			of performance is needed				
			(to be consistent with Table				
			1). If there is a requirement,				
			it should be limited to check				
			that use of these equipments				
			may not worsen the				
			situation.				
			If recommendations are				
			unduly strong, AMP will in				
			practice use only the fully				
			tested equipment, and this				
			may be not beneficial to				
			safety				
			Removal of footnote 90 as				
			it is unclear and seems to				

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ent						modified as		modification/rej
No.						follows		ection
				make the text even more				
				prescriptive than in				
				previous version.				
39	Anne	Anne	Provide IAEA opinion on the Annexes	Annex I-III are presented		NUSSC		
	x I-III	x 1-1	or consider deleting them from the	without making any		committed		
			document.	additional comments by the		Annex can		
				IAEA. In para. 1.13 it is		provides		
				mentioned that Annexes I,		explanations		
				II, and III are examples of		or useful		
				SAMGs from different		information on		
				countries, however, the		implementatio		
				IAEA does not present its		n approaches		
				opinion on these examples.		in different		
				Do these SAMGs comply		countries.		
				with the IAEA guidelines?		Structure of		
				Are they considered best		ANNEX was		
				practices? Are they		modified as		
				recommended by the		"ANNEX I		
				IAEA?		Examples of		
				It would benefit to the		Using SAMGs		
				reader if the IAEA would		in Nuclear		
				present its opinion on these		Power Plants"		
				SAMGs to provide some		to add more		
				advice or give them some		information)		
				credibility.		on		
						implementatio		
				In the editorial note, a		n approaches		
				distinction is made		in different		
				regarding the status of		countries		
				"Appendix" as opposed to				

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ent					_	modified as	-	modification/rej	
No.						follows		ection	
				"Annex". This is not made very clear to the reader. It is					
				suggested that this					
				information be reiterated in					
				the beginning of each					
				Annex.					
				IAEA may also consider					
				deleting the Annexes for the					
				following reasons:					
				• Even if the SAMGs					
				presented are					
				established guidelines,					
				they might (and					
				certainly will) change					
				with time. On the other					
				hand, this guideline					
				should stand the test of					
				time.					
				• The annexes are					
				different in scope/					
				contents					
40	Anne	Anne	In addition, to keep abreast with the	Editorial: Repetition	Modified				
	x II,	x 1-2	international community, the-	The sentence is repeated					
	2^{nd}		development of SAMGs	twice.					
	para.		has been started in 2010, and was fully						
	_		completed end of 2014. In addition, to						
			keep abreast						
			with the international community, the						
			development of SAMGs has been						

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ent	ent					modified as		modification/rej
No.						follows		ection
			started in 2010, and					
			full completion is contemplated for the					
	end of 201		end of 2014.					