DS462

TABLE OF COMMENTS RESOLUTION

Comments from Argentina, Germany NUSSC, Germany WASSC, France, Finland, Poland, Japan NUSSC, Japan WASSC, USA, Switzerland, Canada, Ukraine, ENISS and WNA

Addenda to the IAEA Safety Requirements:

- GSR Part-1 on Governmental, Legal and Regulatory Framework for Safety
- NS-R-3 on Site Evaluation for Nuclear Installations
- SSR-2/1 on Safety of Nuclear Power plants: Design
- SSR-2/2 on Safety of Nuclear Power plants: Commissioning and Operation
- GSR Part 4 on Safety Assessment for Facilities and Activities

Status
STEP 7: first review by the Review Committees (NUSSC, RASSC, TRANSSC, WASSC)
Information of NSGC

Addendum to SSR-2/1

Update of Plant State Definition

<table>
<tr><th>LL</th><th>Current text</th><th colspan="7">Proposal following NUSSC WG meeting held from 5 to 8 March 2013</th><th>Proposed Resolution for the Committees Meetings</th></tr>
<tr><td>Canada</td><td>Entire document</td><td colspan="7">The use of the terms practically eliminated and significant radioactive releases needs to be further discussed and clarified in their application throughout the document.

To define significant radioactive releases as those where limited measures are insufficient (Section 2.13) does not provide sufficient clarity.</td><td></td></tr>
<tr><td>N.A.</td><td>DEFINITIONS pg. 59

[beyond design basis accident]

This term is superseded by design extension conditions.</td><td colspan="7"><s>[beyond design basis accident]</s>

<s>This term is superseded by design extension conditions</s>

Plant states (considered in design)
<table>
<tr><td colspan="2">Operational states</td><td colspan="2">Accident conditions</td><td>(a)</td></tr>
<tr><td>Normal operation</td><td>Anticipated operational occurrences</td><td>Design basis accidents</td><td colspan="2">Design extension conditions</td></tr>
<tr><td></td><td></td><td></td><td>No core melt</td><td>Severe Accidents (Core melt)</td></tr>
</table>
(a) Conditions practically eliminated that are therefore not included in the design basis of items important to safety</td><td></td></tr>
<tr><td>Poland 2.</td><td>Addendum to SSR-2/1

DEFINITIONS pg. 59</td><td>a)</td><td>Conditions <u>that could lead to early and/or large radioactive releases which shall be</u> practically eliminated <u>by the plant design and</u> <s>that are</s> therefore <u>are</u> not included in the design basis of</td><td>To precise the description of plant conditions that are not included in the design basis.</td><td></td><td></td><td>X</td><td>For new plants, any event is considered in the design unless it be demonstrated that it has been practically eliminated.
It is not necessary to refer to the radiological consequences in the definition.
In addition any sequence leading to significant releases is required to be practically eliminated.</td><td></td></tr>
</table>

		items important to safety						
Argentina	**Under Design Extension conditions**	Severe Accidents (Core melt) and spent fuel located in pools? Fukushima lesson.			x			5.30 a Fuel melting outside the containment shall be practically eliminated
France 7	**Definition footnote (a)**	(a) Conditions practically eliminated that are therefore not included in the design basis of items important to safety (but may warrant specific design, manufacturing and in-service inspection provisions for relevant items).	At the NUSSC working group meeting, a slide was shown comparing NS-R-1 definitions and SSR-2/1 definitions, especially with regard to DEC. Such graphic could be useful, maybe not in SSR-2/1 but in the IAEA safety glossary. A condition, such as pressure vessel rupture, can be practically eliminated only because design, manufacturing and in-service inspections provisions are taken….			x	Provision necessary for the practical elimination is part of the demonstration but does not change the definition	
Canada	**Definition**	Plant States Considered in Design Figure Adopt alternate table such as below:	The figure showing DEC as part of the Design Basis is unacceptable and contradicts several sections of the report. The problem is note a) which covers a plant state that is NOT considered in the design, even though the title says the diagram is for plant states considered in the design. If the note is to be retained, then the title must be changed and note must be modified to remove the words “design basis” which will lead to confusion.				DEC is a plant state to be included in the design of new plants. Rules for analyses and design are specific to each plant state and are defined by Requirements 18, 19 and 20	

Operational States		***Accident Conditions***					
Normal Operation	***Anticipated Operational Occurrences***	***Design Basis Accidents***	***Beyond Design Basis Accidents***				
			Design Extension Conditions		***Additional Beyond Design Basis Accidents***		
			No Core Melt	***Severe Accidents*** ***(Core Melt)***	***(including additional sequences that may evolve into Severe Accidents)****		
Design Basis			***Considered in Design***				
Reduced Frequency of Occurrence --->							
****The likelihood of Severe Accident Sequences included here resulting in significant radioactive releases should be practically eliminated.***							

Canada	Definition	Add: Practically Eliminated Suggested definition wording: "The possibility of certain conditions occurring being physically impossible or with a high level of confidence to be extremely unlikely to arise."	The definition of practically eliminated is only given in a footnote (p6). Since the concept of practically eliminated is integral to the definition of plant states, the definition of practically eliminated should be added to the list	x				A definition is currently given by the footnote 2. If NUSSC agrees, it will be added to the list of new definitions
Canada	Definition	Add: Significant Radioactive Releases per footnote to 2.13	The definition of significant radioactive releases is only given in a footnote (p7). Since the term "significant radioactive releases" is used in many places in the document, it should be added to the list	x				Will be added to the list of new definitions
Canada	5.27 Additional modification not initially proposed by the Secretariat	Existing text in SSR-2/1 to be modified to: This might require additional safety features for design extension conditions, or extension of the capability of safety systems to prevent the condition from degrading to a severe accident or to mitigate the severe accident so that the integrity of containment is maintained, accidental radioactive releases are limited, and planned radioactive releases are controlled.	Containment is the final line of defence. The first line of defence in DECs is to use safety features which will prevent a severe accident from occurring in the first place, or to mitigate the consequences of the event so that the challenge to containment is minimized. To ensure consistency with Requirement 4, the text should encompass all of "(iii) confinement of radioactive material, shielding against radiation and control of planned radioactive releases, as well as limitation of accidental radioactive releases		x			Addition in 5.27 …….This might require additional safety features for design extension conditions, or extension of the capability of safety systems ~~to maintain the integrity of the containment~~. to prevent the condition from degrading to a severe accident or to mitigate the severe accident so that only protective measures limited in time and areas would be necessary to ensure the protection of the people and the environment……

Canada	5.28 Additional modification not initially proposed by the Secretariat	Existing text in SSR-2/1 to be modified to: The design extension conditions shall be used to define ~~design basis for~~ additional safety features and other items important to safety that are necessary for preventing such conditions from arising, or, if they do arise, for controlling them and mitigating their consequences.	Design Extension Conditions are not part of the design basis. Different design rules would apply to the design basis and DECs. The statement is also in direct contradiction to 5.27 which states "The main technical objective of considering the design extension conditions is to provide assurance that the design of the plant is such as to prevent accident conditions not considered design basis accident conditions, or to mitigate their consequences, as far as is reasonably practicable." It also contradicts the pre-amble in Requirement 20 which states: 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 design basis accidents or that involve additional failures.			x	SSR 2/1 asks for considering for the design of the plant (also called plant design basis) any event unless it be demonstrated that it has been practically eliminated. These events are categorized as normal operation, AOOS, DBA and DEC. Design extension conditions are used for the design of the additional features (Safety features for DECs) Nevertheless, the rules for the PIE analyses and design of the relevant SSCs are specific to each plant state and are defined by Requirements 18, 19 and 20	
Ukraine 1		It is proposed to modify the last sentence of the definition of the design extension conditions (DEC) as follows: «Design extension conditions could include severe accident conditions»	According to the definition of the plant states (considered in the design), severe accident conditions are part of the DEC		x			Design extension conditions include the severe accident conditions not practically eliminated	
N.A.	Modification for clarity 5.31. The design shall be such that design extension conditions that could lead to significant radioactive releases are practically eliminated (see footnote 1). If not,for design extension conditions that cannot be practically eliminated, only protective measures that are of limited scope in terms of area and time shall be necessary for protection of the public, and sufficient time shall be made available to implement these measures.		5.31 The design shall be such that ~~design extension~~ conditions that could lead to significant radioactive releases are practically eliminated (see footnote 1). 5.31.a ~~If not,~~ For design extension conditions ~~that cannot be practically eliminated,~~ only protective measures that are of limited scope in terms of area and time shall be necessary for protection of the public, and sufficient time shall be made available to implement these measures.					5.31 The design shall be such that conditions that could lead to significant radioactive releases are practically eliminated (see footnote 1). 5.31.a For design extension conditions~~,~~ only protective measures that are of limited scope in terms of area and time shall be necessary for protection of the public, and sufficient time shall be made available to implement these measures.	
Japan	5.31	**Delete** the entire sentence.	Same description appears in Para 2.11 Main purpose of original para 5.31 was to explain the conditions practically eliminated. However, this part is proposed to move to 5.31a with some modification.						
Canada	5.31	Existing text in SSR-2/1 to be modified to: The design, together with additional safety features,	The overriding objective for DECs should be to preclude long term land contamination. This is provided through design basis elements and additional safety			x	The practical elimination cannot depend on the use of portable equipment. Nevertheless, the accident management of sequences beyond DEC can		

		such as portable equipment, shall be such that the likelihood of event sequences that could lead to significant radioactive releases is practically eliminated.	features.				include the possibility of use of portable/mobile equipment to avoid significant releases provided that the time delay for their installation is consistent with the plant resources and capabilities	
Argentina	5.31a	5.31.a ~~If not,~~ For design ¿extension? (design modification or life extension?, not clear to me) conditions ~~that cannot be practically eliminated,~~ only protective measures that are of limited scope in terms of area and time shall be necessary for protection of the public (and workers? Once again, Fukushima), and sufficient time shall be made available to implement these measures.					See definition and Requirement 20. Currently whatever the accident category no dose limit are indicated	
France 8	5.31a	5.31.a ~~If not,~~ For design extension conditions ~~that cannot be practically eliminated~~ where core melt occur~~,~~ only protective measures that are of limited scope in terms of area and time shall be necessary for protection of the public, and sufficient time shall be made available to implement these measures. For other design extension conditions considered in the original design of the plant, the design shall be such that these conditions will not warrant protective measures for the public.	This wording is adequate for existing reactors but is not ambitious for new reactors. WENRA safety objectives for new NPP restrict such expectations to accidents with core melt (a subset of DEC)				Such a requirement which is quite ambitious has not been discussed during the latest NUSSC working group meeting.	
Germany WASSC	4.20 Additional modification not initially proposed by the Secretariat	"In particular, the design shall take due account of: … (c) The facilities necessary for the processing (pretreatment, treatment and conditioning) and storage of radioactive waste generated in operation and provision for managing the radioactive waste that will be generated in the decommissioning of the plant."	Ensuring consistency with the General Safety Requirements No. GSR Part 5 "Predisposal Management of Radioactive Waste", see Paras 1.2, 1.4 and 1.12. According to the IAEA Safety Glossary (2007 Edition), the term 'processing' includes 'pretreatment', 'treatment' and 'conditioning'.	x				The facilities necessary for the processing and storage of radioactive waste generated in operation and provision for managing the radioactive waste that will be generated in the decommissioning of the plant."

DS462 Addenda to GSR Part 1, NS-R-3, SSR-2/1, SSR-2/2 and GSR Part 4 –
Comment resolution table draft 1, 7 June 2013

1) Prevention of unacceptable radiological consequences for the public and environment

LL	Current text	Proposal following NUSSC WG meeting held from 5 to 8 March 2013	Proposed Resolution for the Committees Meetings
21.1	2.13. … (4) The purpose of the fourth level of defence is to mitigate the consequences of accidents that result from failure of the third level of defence in depth. The most important objective for this level is to ensure the confinement function, thus ensuring that radioactive releases are kept as low as reasonably achievable.	2.13. … (4) The purpose of the fourth level of defence is to mitigate the consequences of accidents that result from failure of the third level of defence in depth. This level is aimed at preventing the progression of fuel damage and mitigating consequences of severe accidents. In case of a severe accident, the most important objective for this level is to ensure the confinement function, thus ensuring that significant radioactive releases (footnote) would be practically eliminated ~~are kept as low as reasonably achievable.~~ Footnote: "significant radioactive releases": Those releases for which only limited protective measures in area and time are insufficient to protect the public and the environment.	(4) The purpose of the fourth level of defence is to mitigate the consequences of accidents that result from failure of the third level of defence in depth. This level is aimed at preventing the progression of ~~fuel damage~~the accident and mitigating the consequences of a severe accident. In case of a severe accident, the most important objective for this level is to maintain the confinement function ~~thus ensuring that significant radioactive releases (footnote) would be practically eliminated~~ to limit the releases so that the protection of the people and the environment can be ensured by only implementing protective measures limited in time and areas. This level includes additional features which are necessary for the practical elimination of sequences possibly leading to significant radioactive releases (footnote) Footnote: "Significant radioactive releases": ~~Those releases~~Large or early releases for which ~~only limited~~protective measures limited in area and time are insufficient to protect the people and the environment.

Argentina	2.13 (4)	In case of a severe accident, the most important objective for this level is to ensure the confinement function, thus ensuring that significant radioactive releases (footnote) would be practically eliminated Is it realistic for the whole range of severe accidents? Mmmmm...			x	For new plants, the design shall be such that a sequence not practically eliminated not lead to significant releases, and those possibly leading to significant releases be practically eliminated.	
France 9	2.13 (4)	(4) The purpose of the fourth level of defence is to mitigate the consequences of accidents that result from failure of the third level of defence in depth. This level is aimed at preventing the progression of fuel damage and mitigating consequences of severe accidents, should they occur.	Clarification		x	x	Not needed	

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
Japan	2.13 (4)	**Delete.** ~~In case of a severe acciden~~	**Clarification**. The object of fourth level doesn't focus on only severe accident but DEC.			x		
Japan	2.13 (4) Footnote 3:	"significant radioactive releases": Those releases for which only limited protective measures in area and time are insufficient to protect the ~~public~~ people and the environment.	**Editorial**. To keep consistent with sub-title of IAEA Safety Standards, 'public' should be replaced with 'people'. The same wording is found in PREAFACE, it is also replaced.	xc				
Canada	2.13 (5) Additional modification not initially proposed by the Secretariat	Existing text in SSR-2/1 to be modified to: (5) The purpose of the fifth and final level of defence is to mitigate the radiological consequences of radioactive releases that could potentially result from accidents. This requires the provision of an adequately equipped emergency control centre and emergency plans and emergency procedures for on-site and off-site emergency response. Note: Off-site intervention measures to mitigate radiological consequences for all accident conditions might still be required by the responsible authorities.	The introduction of the term "significant radioactive releases" to the purpose of the fourth level of defence in depth has created an inconsistency with the statement of the purpose of the fifth level of defence in depth: "The purpose of the fifth and final level of defence is to mitigate the radiological consequences of radioactive releases that could potentially result from accident conditions." Also, by using the term "accident conditions" in the purpose for the fifth level of defence in depth and defining "accident conditions" to encompass design basis accidents and design extension conditions introduces a gap with respect to "(a)" in the definition of plant states. Additional clarity in the purpose for the fifth level of defence in depth is needed to align with Principle 9 in Section 2.11	x				See new proposal for (4) (5) The purpose of the fifth and final level of defence is to mitigate the radiological consequences of radioactive releases that could potentially result from accidents ~~accident conditions~~. This requires the provision of an adequately equipped emergency control centre and emergency plans and emergency procedures for on-site and off-site emergency response Principle 9): plant event sequences that could result in high radiation doses or significant radioactive releases must be practically eliminated1 and plant event sequences with a significant frequency of occurrence must have no or only minor potential radiological consequences. An essential objective is that the necessity for off-site intervention measures to mitigate radiological consequences be limited or even eliminated in technical terms, although such measures might still be required by the responsible authorities.

1

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
Canada	2.13 footnote	Footnote: "significant radioactive releases": Those releases ~~for which only limited protective measures in area and time are insufficient to protect the public and the environment.~~ that result in long term land contamination requiring permanent relocation of the population or, alternatively, long term contamination of a significant area.	Use of the word 'insufficient" is incorrect. Change to "those that result in long term land contamination requiring permanent relocation of the population or, alternatively, long term contamination of a significant area"		x		"Significant releases" include both early and large releases early releases. Early releases are defined as releases occurring within a period of time during which any protective measure could be implemented due to a lack of time.	See new proposal for the footnote
Ukraine	2.13	It is proposed to modify the footnote in the following way : "significant radioactive releases": Those releases for which only limited protective measures in area and time are insufficient to protect the public and the environment. or available time for implementation of necessary protective measures is inadequate				x	If time for its implementation is inadequate then the measure is insufficient. So the definition proposed fits your remark	See new proposal for the footnote
ENISS	2.13 (4) 2.13 footnote	…thus ensuring that ~~significant~~ large radioactive releases[2] would be practically eliminated. 1 "~~significant~~ large radioactive releases": Those releases for which only limited protective measures in area and time are insufficient to protect the public and the environment.	The wording "significant" seems inadequate According to the footnote, a release which needs protection of population, but limited in time and space, is not significant… To be explained to newspaper, if this would happen		x			See new proposal for (4) See new proposal for the footnote
WNA	2.13 (4) and footnote	2.13. … (4) The purpose of the fourth level of defence is to mitigate the consequences of accidents that result from failure of the third level of defence in depth. This level			x			See new proposal for (4) See new proposal for the footnote

2 "significant radioactive releases": Those releases for which only limited protective measures in area and time are insufficient to protect the public and the environment.

LL	Current text			Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
			is aimed at preventing the progression of fuel damage and mitigating the consequences of a severe accidents. In case of a severe accident, the most important objective for this level is to ensure the confinement function, thus ensuring that significant radioactive releases (footnote) would be practically eliminated ~~are kept as low as reasonably achievable.~~ Footnote: "significant radioactive releases": Those releases for ~~which only limited~~ **the** protective measures **are limited** in area and time **and** are insufficient to protect the public and the environment.	This requirement requires modification as indicated to read correctly. Re-formulation of the footnote is proposed to correct the grammar of the sentence. But in principle, a quantitative value or better a range of "significant radioactive releases" should be implemented.					
25.1	**Requirement 33: Sharing of safety systems between multiple units of a nuclear power plant** **Safety systems shall not be shared between multiple units unless this contributes to enhanced safety.**			**Requirement 33: Sharing of safety systems between multiple units of a nuclear power plant** **Safety systems shall not be shared between multiple units unless, in accident conditions, this contributes to enhanced safety for the units.**					**Requirement 33: Sharing of safety systems between multiple units of a nuclear power plant** **Safety systems shall not be shared between multiple units unless, in accident conditions, this contributes to enhanced safety ~~for the units~~.** **5.63 Sharing** ~~S~~safety system support features and safety related items among the units~~shall be permitted to be shared between several units of a nuclear power plant if this contributes to safety~~ is allowed if it can be justified that it facilitates the accident management of one unit by giving the possibility to restore a safety function. **Such sharing shall not be permitted if it would increase either the likelihood or the consequences of an accident at any unit of the plant.**
Argentina	**Requirement 33**	**Safety systems shall not be shared between multiple units unless, in accident conditions, this contributes to enhanced safety for the units. These systems should be clearly identified in some part of the draft in order to prevent misinterpretations.**			**x**				See new proposal

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
France 10	**Requirement 33**	**Requirement 33: Sharing of safety systems between multiple units of a nuclear power plant** **Safety systems shall not be shared between multiple units unless, in accident conditions, this contributes to enhanced safety for the units even if each of them is under accident conditions.**	**Clarification**		**x**			See new proposal
Japan	**Requirement 33**	**Requirement 33: Sharing of safety systems between multiple units of a nuclear power plant** **Safety systems shall not be shared between multiple units unless~~, in accident conditions,~~ this contributes to enhanced safety for all of the shared units in accident conditions.**	**Clarification.** Clarify the cases of concurrent events occurred in both units at once. Clarify the exempt condition for sharing of safety systems in accident conditions.		**x**			See new proposal
USA 5	**Requirement 33**	**Safety systems shall not be shared between multiple units unless, in accident conditions, it can be demonstrated that sharing the systems ~~this~~ contributes to enhanced safety ~~for the units~~.**			**x**			See new proposal
WNA	**Requirement 33**	… Safety systems shall not be shared between multiple units unless~~, in~~ under accident conditions~~,~~ this contributes to enhanced safety for the units.	The change is required to clarify the requirement.		**x**			See new proposal
35.1, 46.16 and 46.17	**Requirement 68: Emergency power supply** **The emergency power supply at the nuclear power plant shall be capable of supplying the necessary power in anticipated operational occurrences and accident conditions, in the event of the loss of off-site power.**		New paragraph under Requirement 68, after 6.45 6.45.a The design shall include features for connection of alternative power sources (available at the site or mobile) to cope with prolonged total loss of AC power or DC sources.					~~6.45.a The design shall include features for connection of alternative power sources (available at the site or mobile) to cope with prolonged total loss of AC power or DC sources.~~ New proposals for the new paragraph under Requirement 68, after 6.45 6.45a The design shall include the necessary features for use of non-permanent power sources to cope with a prolonged total loss of AC power or DC sources. These power sources may be available at the site or not.

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013				Proposed Resolution for the Committees Meetings	
							or 6.45a The combined means to provide emergency power shall also consider the use of non-permanent power sources, available at the site or not, to cope with a prolonged total loss of AC power or DC sources.	
Argentina	6.45a	The design shall include features for connection of alternative power sources (normally in stand-by and available at the site, or mobile and preferably located not too far from the site neighbourhood) to cope with prolonged total loss of AC power or DC sources.			x			See new proposal
Poland 3	**Addendum to SSR-2/1** New paragraph under Requirement 68, after 6.45	6.45.a The design shall include features for connection of alternative power sources (stationary and/or mobile, available at the site ~~or mobile~~) to cope with ~~prolonged~~ total loss of AC power or DC sources.	Both stationary and/or mobile alternative power resources may be made available at the plant site. The word "prolonged" is misleading as in certain conditions the total loss of AC or DC power sources may lead to serious consequences in quite short time. In particular – as it was demonstrated by the European "stress tests" – the total SBO occurring during so called "mid-loop operation" of PWRs may lead to boiling of reactor coolant within less than 1 hour, followed by pressurization of the containment and impossibility of making up the coolant by gravity.			x	The consequences of a total loss of Ac or DC power shall be assessed to know what the response of the reactor would be (See GSR part4). Depending on the grace period prior to the core melting the design might be modified or backfitted. But relying on the use of portable equipment within a very short time is not reliable and this is why the wording 'prolonged' is used.	
Finland	**6.45a**		The term alternative power should be defined.	x			Alternative power sources are power sources	See new proposal
Switzerland	**6.45a**	... to cope with prolonged total loss of AC power sources, or the loss of DC sources due to the	With the text modification Para. 6.45a is consistent with Para. 6.44a (battery autonomy) and the requirement can be realistically fulfilled at all.					

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
		discharge of batteries.						
Japan	**6.45a**	The design shall include features for connection of alternative power sources (other power sources than those for the design basis accidents, available at the site or mobile) to cope with prolonged total loss of AC power or DC sources.	**Clarification**. The meaning of "alternative" should be clarified. That is, the alternative power sources shall be required for the design extension conditions (w and w/o core melt). This also clarifies the design requirements for the alternative power sources (e.g. reliability, robustness, resilience etc.).	x				
USA 13	**6.45a**	The design shall include the appropriate capability for use ~~features for connection~~ of alternative power sources (available at the site or mobile) to cope with prolonged total loss of AC power or DC sources.	Recommend modifying this requirement. First, it is overly prescriptive of a particular solution (features for connection) which may or may not be essential to solving the safety issue. Second, it uses several terms such as "alternative power supplies" and "prolonged total loss of AC power" that are poorly defined. Third, the revision is not fully consistent with the U.S. approach, which focuses on the loss of ac power and not DC power as well This thought is probably better fit for the guidance area.	x				
21.2	**Requirement 58: Control of containment conditions** **6.28 The capability to remove heat from the containment shall be ensured, in order to reduce the pressure and temperature in the containment, and to maintain them at acceptably low levels after any accidental release of high energy fluids. The systems performing the function of removal of heat from the containment shall have sufficient reliability and redundancy to ensure that this function can be fulfilled.**		New paragraph under Requirement 58 after 6.28 6.28 a The design shall include features to facilitate the use of alternative/mobile equipment for removing heat from the containment for preserving its integrity in case of loss of all containment cooling systems.					~~6.28 a The design shall include features to facilitate the use of alternative/mobile equipment for removing heat from the containment for preserving its integrity in case of loss of all containment cooling systems.~~ New proposal for the new paragraph under Requirement 58 after 6.28 6.28 a This capability shall also consider the use of non-permanent equipment, available at the site or not, for removing energy in case of the loss of the containment cooling of the unit.

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013				Proposed Resolution for the Committees Meetings	
Argentina	**6.28a**	Note that this para is connected with 6.45a, partial duplication.					**Features for use of a power source are requested by 6.45a.** **6.28 a is more general**	
Finland	**6.28a**	The design shall include features to facilitate the use of alternative/ equipment for removing heat from the containment for preserving its integrity in case of loss of all containment cooling systems.	delete mobile, mobile equipment are alternative equipment	**x**				
Japan	**6.28a**	The design shall include features to facilitate the use of alternative/mobile equipment for removing heat from the containment for preserving its integrity even in case of loss of all containment cooling systems.	**Strengthen** the requirement. Alternative/mobile equipment might be needed once the efficiency of required function is lost even before all containment cooling systems have been lost.		**x**			See new proposal
USA 7	**6.28a**	The design shall include features to facilitate...preserving its integrity in case of ~~loss of all containment cooling systems~~ design extension conditions involving loss of the containment cooling function.	It's important that provisions associated with design extension conditions be clearly indicated since the design rules are so fundamentally different from the DBA. Second, the function is important, not necessarily the systems.			**x**	The design shall already include additional features to mitigate the consequences of multiple failures in the safety systems which (Design extension condition)s. 6.28a deals with situations beyond DEC and addresses a requirement for the installation of features enabling the use of equipment which is not part of the unit.	

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013				Proposed Resolution for the Committees Meetings
Canada	**6.28a**	6.28 a The design shall include features to facilitate the use of alternative/mobile equipment for removing heat from the containment for preserving its integrity. Suggested rewording: Capability to remove energy from containment shall consider the use of features (permanent or mobile equipment) to facilitate the use of alternative equipment for removing energy in case of loss of all containment cooling systems	The way this paragraph is worded is inconsistent with the language used in 6.28 and comes across as overly design prescriptive. Some new designs may be able to demonstrate integrated design alternatives to using external features or mobile equipment (including permanent features). A proponent should be able to present an argument. The presentation of a suitable argument should be the focus of the IAEA requirement.		**x**		See new proposal
30.2	6.29. Design features to control fission products, hydrogen, oxygen and other substances that might be released into the containment shall be provided as necessary: (a) To reduce the amounts of fission products that could be released to the environment in accident conditions; (b) To control the concentrations of hydrogen, oxygen and other substances in the containment atmosphere in accident conditions so as to prevent deflagration or detonation loads that could challenge the integrity of the containment.		New paragraph under Requirement 58 before 6.29 6.28.b The loss of containment integrity shall be practically eliminated. This shall be achieved without the use of means that could lead to significant radioactive releases.				New paragraph under Requirement 58 before 6.29 628.b The loss of the structural containment integrity shall be practically eliminated. This shall be achieved without the use of means that could lead to significant radioactive releases.

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
Argentina	6.28b	**This para alone seems a declaration of good intentions, it should read, for example: Consideration should be given to all necessary design features for preventing in the extent of possible the loss of containment integrity resulting from conceivable severe accidents.** **Besides, filtered venting for the containment should also be mentioned as another design feature to be taken into account.**						
France 11	6.28b	**Replace by** Containment integrity shall be preserved, including in the long term following a severe accident, without the use of means that could lead to significant radioactive releases.	Practical elimination may be excessive, depending on the understanding of "integrity". (may be "very unlikely" could be used if "normal" containment leakage is considered as a loss of integrity).		x			See new proposal
ENISS	6.28b	~~The loss of containment integrity shall be practically eliminated. This shall be achieved without the use of means that could lead to significant radioactive releases.~~	What is to be practically eliminated is large releases, and this is already required in 2.13. This may be accomplished using the containment in the plant states where it is relevant or by other means when containment integrity is not required. This requirement is excessive because containment integrity is not required in part of shutdown states.			x		See new proposal

46.3	**Requirement 67: Emergency control centre** **An on-site emergency control centre, separate from both the plant control room and the supplementary control room, shall be provided from which an emergency response can be directed at the nuclear power plant.** 6.42. Information about important plant parameters and radiological conditions at the nuclear power plant and in its	**Requirement 67: ~~Emergency control~~ Technical support centre** (Foot note) **The design of the plant shall include an on-site ~~emergency control~~ technical support centre, separate from both the plant control room and the supplementary control room, ~~shall be provided~~ from which technical support ~~an emergency response~~ can be ~~directed at the nuclear power~~ plant provided to the operation staff during emergency conditions.** 6.42 .Information about important plant parameters and radiological conditions at the nuclear power plant and in its immediate surroundings shall be provided in the on-site	**Requirement 67: Technical support centre** (Foot note) ~~The design of the plant includes a~~An on-site technical support centre, separate from both the plant control room and the supplementary control room, shall be provided from which technical support can be provided to the operation staff during emergency conditions. 6.42. Information about important plant parameters and radiological conditions at the nuclear power plant and in its immediate surroundings shall be provided in the on-site technical support centre. The on-site

LL	Current text	Proposal following NUSSC WG meeting held from 5 to 8 March 2013	Proposed Resolution for the Committees Meetings
	immediate surroundings shall be provided in the on-site emergency control centre. The on-site emergency control centre shall provide means of communication with the control room, the supplementary control room and other important locations at the plant, and with on-site and off-site emergency response organizations. Appropriate measures shall be taken to protect the occupants of the emergency control centre for a protracted time against hazards resulting from accident conditions. The emergency control centre shall include the necessary systems and services to permit extended periods of occupation and operation by emergency response personnel.	technical support centre. The on-site technical support centre shall provide means of communication with the control room, the supplementary control room and other important locations at the plant, and with on-site and offsite emergency response organizations. ~~Appropriate measures shall be taken to protect the occupants of the emergency control centre for a protracted time against hazards resulting from accident conditions. The emergency control centre shall include the necessary systems and services to permit extended periods of occupation and operation by emergency response personnel.~~ 6.42 a The design basis of the technical support centre shall be such that it remains operable and habitable for a protracted period of time in situations generated by all accident conditions and hazards with significant margins. 6.40a The design basis of the control room shall be such that it remains operable and habitable for a protracted period of time in situations generated by all accidents conditions and hazards with significant margins. Footnote: Other facilities for the management of emergencies such as the Emergency Centre are addressed in GSR Part 7: Emergency Preparedness and Response	technical support centre shall provide means of communication with the control room, the supplementary control room and other important locations at the plant, and with on-site and offsite emergency response organizations. 6.42 a ~~The design basis of the technical support centre shall be such that it remains operable and habitable for a protracted period of time in situations generated by all accident conditions and hazards with significant margins.~~The technical support centre shall remain operable and habitable for a protracted period of time in situations generated by the accident conditions and hazards considered in the design of the plant. This requirement shall be fulfilled with significant margins to accommodate with external hazards of a severity or duration exceeding that considered in their definition. 6.40a ~~The design basis of the control room shall be such that it~~ The control room shall remain operable and habitable for a protracted period of time in situations generated by ~~all~~the accident conditions and hazards considered in the design of the plant. This requirement shall be fulfilled with significant margins to accommodate with external hazards of a severity or duration exceeding that considered in their definition. Footnote: Other facilities for the management of emergencies such as the Emergency Centre are addressed in GSR Part 7: Emergency Preparedness and Response

Japan	**Requirement 67**	**Requirement 67: Technical support centre** **The design of the plant shall include an on-site technical support centre, separate from both the plant control room and the supplementary control room, from which technical support can be provided to the operation staff ~~during~~ in all plants states including post-emergency conditions.**	**Clarification**. Not defined emergency conditions well, however, emergency conditions should include post -emergency conditions to be considered in for TSC. The TSC could be beneficial even in normal operation. The TSC should be used in all plant states including post-emergency conditions.				“In all plant states” is a bit excessive. The plant can be normally operated in operational state and AOOS without a need for a technical support. Same in DBA even if for DBA a support may be useful.	In conclusion the terminology “in emergency conditions “may be modified.
Japan	**6.42a Addition of two new paragraphs 6.42b and 6.42c**	**Add.** 6.42b The design basis of the technical support centre shall be suitably shielded, ventilated, sized and well equipped to operation stuff workers to perform accident	**Clarification** taking account into the lessons learnt #46.3 from SSR-2/2 to strengthen the robustness even in the case of severe accident management.				Included in “shall remain operable and habitable	

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013				Proposed Resolution for the Committees Meetings
		management actions, under severe accident conditions involving multiple units, to withstand the loads of external hazards. 6.42c The technical support centre could be used in operational states for information dissemination to the public.	Another benefit of TSC should be described.				
Argentina	**Requirement 67** **6.40a**	**Add at the end:** **During emergency conditions (I assume that them cover accidental situations, is it correct?) a technical support centre, outside the plant and located on an adequate site not too far from it...** **Justification: During accidental scenarios both control rooms may be not functional, nor accessible or not habitable.** The design basis of the control room shall be such that it remains operable and habitable for a protracted period of time in situations generated by all accidents conditions and hazards with significant margins. Is it always realistic and practicable for all accidental situations? I don't think so.				Strengthening the design of both TSC and MCR is now requested	
WNA	**Requirement 67**	Requirement 67: ~~Emergency control~~ Technical support centre (Foot note) ~~The design of the plant shall include~~ A~~a~~n on-site technical support centre, separate from both	The action verb was erroneously deleted from this requirement and needs to be re-inserted to make it a sentence.	**x**			

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
		the plant control room and the supplementary control room, shall be provided ~~shall be provided~~ from which ~~an emergency response~~ technical support… or: **~~The design of the plant shall include~~ The design of the plant shall include an on-site technical support centre, separate from both the plant control room and the supplementary control room, ~~shall be provided~~ from which ~~an emergency response~~ technical support can be ~~directed at the nuclear power plant~~ provided to the operation staff during emergency conditions.**	Typo. In DS462, the first part of the sentence was suppressed by mistake					
Poland 4	**Addendum to SSR-2/1** Requirement 67	**Requirement 67: ~~Emergency control~~ Technical support centre** (Foot note) The design of the plant shall include an on-site technical support centre, separate from both the plant control room and the supplementary control room, ~~shall be provided~~ from which ~~an emergency response~~ technical support can be ~~directed at the nuclear power plant~~ provided to the operation staff during emergency conditions.	This deleted (highlighted) fragment of the sentence should be brought back.	x		x		
France 12	**Requirement 67**	**Add at the end** **shall be provided**	A verb is missing	x				

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013				Proposed Resolution for the Committees Meetings	
Finland	**Requirement 67**	Both the emergency center and the technical support Center should be either in SSR-2/1 or in GSR Part 7.		x			???	
Finland	**6.40a**	The design basis of the control room shall be such that it remains operable and habitable for a protracted period of time in situations generated by accidents conditions and extreme hazards with significant margins.	clarification, All accidents and hazards is not defined.			x	Extreme hazard is not defined and therefore cannot be an input for the engineering. The design of structures and equipment important to safety is already expected to include appropriate margins to avoid a cliff edge effect Here we ask for significant margins so that these structures can withstand loads significantly higher than those considered for design	
Switzerland	**6.40a**	Add at the end: Alternatively these requirements shall be fulfilled by the supplementary control room.	The text addition ensures more flexible design solutions.			x	According to the current Requirement 66, it is not requested to operate the plant from the supplementary control room in accident conditions.	
Germany WASSC	6.40a	"The design basis of the control room shall be such that it remains operable and habitable for a protracted period of time in situations generated by all accident~~s~~ conditions and hazards with significant margins."	Editorial.	x				
USA 8	6.40a	6.40a The design basis of the control room shall be such that it remains operable and habitable ~~for a protracted period of time,~~ with significant time margins, in situations generated by ~~all~~ design basis accidents conditions and hazards ~~with significant margins~~.	The phrase significant margins should be describing the time the control room remains operable. As written it was describing the accidents and hazards. The use of the term "all accident conditions" would prescribe that the CR be designed for the full range of design extension conditions. The term "with significant time margins" would enable key design extension scenarios like extended loss of power to be considered			x	See Requirement 20, item 5.28 5.28. The design extension conditions shall be used to define the design basis for safety features and for the design of all other items important to safety that are necessary for preventing such conditions from arising, or, if they do arise, for controlling them and mitigating their	

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013				Proposed Resolution for the Committees Meetings	
			in the design. Current use of conservative source terms within the DBA analysis techniques provides adequate habitability protection from a radiological perspective.				consequences. (In particular the MCR shall remain habitable taking into account the radioactivity at the site caused by a severe accident) 5.28.Predicting hazards at, or in the vicinity of a site with a good accuracy is difficult. So not including significant margins in the design of a few systems, structures and components recognized as essential for preventing or mitigating unacceptable radiological releases would not be understood after the FKSH Daichi accident (see your proposal for 5.21)	
Canada	6.40a	~~The design basis of the control room shall be such that one remains operable and habitable for a protracted period of time in situations generated by all accidents conditions and hazards with significant margins.~~ Replace with the following: The design of the control facilities (main control room and secondary control areas) shall be such that necessary operations and monitoring can be performed from one of these locations as required following design basis accidents and design extension conditions	The term “significant margins” is too vague. It is not consistent with the use of “best estimate methodology” for assessment of design extension conditions. Also, clause 5.29(d) considers “moderately more severe than those considered in the design basis”. Delete “with significant margins” (or reword as “with a robust margin that exceeds the design basis”). The term “control room” should be replaced with “control facilities (main and backup control rooms)”			x	See answer to Finland and USA. See new proposal for 5.21 Main control room and supplementary control rooms are the terms used in the IAEA Safety Standards	See new proposal
WNA	6.40a	6.40a The design basis of the control room shall be such that it remains operable and habitable for	Same comment as for 6.42a	x				See new proposal

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013				Proposed Resolution for the Committees Meetings	
		a protracted period of time in situations generated by all accidents conditions and hazards considered in the design of the plant, with significant margins.						
Finland	**6.42**	The design basis of the technical support centre shall be such that it remains operable and habitable for a protracted period of time in situations generated by accident conditions and extreme hazards with significant margins.	As above for 6.40a			x	See answer for 6.40a	See new proposal
Canada	**6.42 and 6.42a**	6.42. Information about important plant parameters and radiological conditions at the nuclear power plant and in its immediate surroundings shall be provided in the ~~on-site~~ technical support centre. The ~~on-site~~ technical support centre shall provide means of communication with the control room, the supplementary control room and other important locations at the plant, and with on-site and offsite emergency response organizations. ~~Appropriate measures shall be taken to protect the occupants of the emergency control centre for a protracted time against hazards resulting from accident conditions. The emergency control centre shall include the necessary systems and services to permit extended periods of occupation and operation by emergency response personnel.~~	Delete the words “on-site” when referring to the technical support centre. A TCC can be located offsite. The term “significant margins” is too vague. It is not consistent with the use of “best estimate methodology” for assessment of design extension conditions. Also, clause 5.29(d) considers “moderately more severe than those considered in the design basis”. Delete “with significant margins” (or reword as “with a robust margin that exceeds the design basis”).				See answer for 6.40a “In emergency conditions” can be modified see answer to Japan	See new proposal

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
		6.42 a ~~The design basis of the technical support centre shall be such that it remains operable and habitable for a protracted period of time in situations generated by all accident conditions and hazards with significant margins~~. Replace with the following: The design of the technical support centre shall be such that necessary operations and monitoring can be performed from this location as required following design basis accidents and design extension conditions						
USA 9	**6.42a**	The design basis of the technical support centre shall be such that it remains operable and habitable ~~for a protracted period of time~~, with significant time margins, in situations generated by ~~all~~ design basis accident conditions and hazards ~~with significant margins~~.	The requirement is not fully consistent with the U.S. approach, requiring that the main control room and TSC remains operable and habitable for a protracted period of time in situations generated by all accidents conditions and hazards **with significant margins**.			x	NUREG-0696 might be revised in the coming years but some of its requirements seem no longer appropriate for new plants. Requirements for MCR and TSC are expected to be similar for the global consistency of the design. MCR is expected to be habitable for emergency conditions which might exceed those considered in the characterization of the hazard.	See new proposal
USA 10	**6.42a**	The design basis of the technical support centre shall be such that it remains operable	There are no habitability requirements for TSCs in the regulations, other than a generic "*Adequate emergency*			x		

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
		and habitable for a protracted period of time in ~~situations generated by all accident conditions and hazards with significant margins~~ emergency response situations.	*facilities . . . are provided."* NUREG-0696 provides guidance on what an adequate TSC is. With regard to habitability, NUREG-0697 provides that the TSC should have the same radiological habitability as the control room under **accident** conditions. The guidance goes on to state that applicable criteria are provided in Part 50 Appendix A, **GDC-19** and NUREG-0800 **SRP 6.4**. NUREG-0696, does require that *"If the TSC becomes inhabitable, the TSC plant management function shall be transferred to the control room."* Recognizing the backup nature of the E-plan and the TSC to the engineered safeguard features, etc, , NUREG-0696 provides that *"The TSC ventilation system need not be seismic category I qualified, redundant, instrumented in the control room, or automatically activated."* Accordingly, the US TSCs are only designed for design basis events. However, it is important to note that a DBA LOCA analysis assumes core melt in the analysis of containment performance (see SRP 15.6.5A,B,C,D). This provides some margin for severe accidents but certainly doesn't address multiple failures (e.g., release from containment is limited to T/S leak rate.					
WNA	**6.42a**	6.42a The design basis of the technical support centre shall be such that it remains operable and habitable for a protracted period of time in situations generated by all accident conditions and hazards	The words in red are added because it is impossible to consider <u>all</u> (i.e. without any limit) hazards and accident conditions for the design of the technical support centre. What is required is that it survives and remains operational after events worse	x				

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013				Proposed Resolution for the Committees Meetings
		considered in the design of the plant, with significant margins.	than those considered in the design of the plant. In this sentence, the words “considered in the design” have the same meaning as in the Definition section (page 59), i.e. (plant states = operational states + accident conditions), therefore including “design extension” conditions.				

2) Avoid long term off site contamination (Severe accident mitigation)

LL	Current text	Proposal following NUSSC WG meeting held from 5 to 8 March 2013	Proposed Resolution for the Committees Meetings
19.1	5.21. The seismic design of the plant shall provide for a sufficient safety margin to protect against seismic events and to avoid cliff edge effects (see footnote 5).	5.21 ~~The seismic design of the plant shall provide for a sufficient safety margin to protect against seismic events and to avoid cliff edge effects (see footnote 5).~~The design of items important to safety shall include sufficient provisions or margins to avoid cliff edge effects for external hazards of a severity or duration moderately exceeding those considered in their design basis.	5.21 The design of items important to safety shall ~~include sufficient~~ provide for adequate provisions or margins to avoid cliff edge effects ~~for~~in the event of an external hazard~~s~~ of a severity or duration moderately exceeding ~~those~~that considered in their ~~design bnasis~~definition. For systems and structures ultimately necessary to prevent significant radiological releases, this requirement shall be fulfilled with significant margins to accommodate with external hazards of a severity or duration exceeding that considered in their definition.

Argentina	**5.21**	5.21 The design of items important to safety shall include sufficient provisions or margins to prevent ~~avoid~~as much as possible cliff edge effects for external hazards of a severity or duration moderately exceeding those considered in their design basis.				**x**	As the requirement is already quite vague in the variation to be considered (small/moderately..), adding “as much as possible’ does not help	
Switzerland 1	**5.21**	The design of items important to safety shall include sufficient provisions or margins to avoid cliff edge effects for external hazards and for a combination of external events of a severity or duration moderately exceeding those considered in their design basis.	Lessons learned from the Fukushima accident			**x**	Agree. Consideration of concurrent hazards is indicated once in 5.17. For the rest of the document “hazards” is used as a generic terminology.	
Japan	**5.21**	The design of items important to safety shall include adequate ~~sufficient~~ provisions or margins to avoid cliff edge effects for external hazards of a severity or duration moderately exceeding those considered in their design basis.	**Clarification**. It is unclear to include sufficient safety margins for site evaluation.	**x**				
USA 3	**5.21**	Revise 5.21 to read: The design of items important to safety for external hazards shall include sufficient provisions or margins for (1) cliff edge effects, (2) margin for the	Moderately exceeding is too vague a concept to be useful. The change attempted to list			**x**	Agree, but how much the margin should be, and what should be cover is more relevant for the	

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
		limited accuracy, quantity, and period of time in which historical data for external hazards have been accumulated, (3) appropriate combination of effects of normal and accident conditions with the effects of external hazards, (4) the importance of the safety function to be performed.	the most important considerations to be taken when constructing a margin for natural phenomena.				safety guide.	
Canada	**5.21**	The design of ~~items~~ SSCs important to safety shall include sufficient provisions or margins to avoid cliff edge effects for external hazards of a severity or duration moderately exceeding those considered in their design ~~basis~~.	Should use proper terminology here. i.e. "SSCs" In addition, this clause covers external hazards, some of which are inside the design basis and some are outside. It is very confusing to use the term "design basis" for events beyond the design basis. Delete the word "basis"		**x**			
22.1	5.29. The analysis undertaken shall include identification of the features that are designed for use in, or that are capable of preventing or mitigating, events considered in the design extension conditions. These features: (a) Shall be independent, to the extent practicable, of those used in more frequent accidents; (b) Shall be capable of performing in the environmental conditions pertaining to these design extension conditions, including design extension conditions in severe accidents, where appropriate; (c) Shall have a reliability commensurate with the function that they are required to fulfil.		5.29 …(c) (d) Shall include sufficient design margins to remain operational in conditions moderately more severe than those considered in their design basis to avoid cliff edge effects to occur.					5.29 …(c) (d) ~~Shall include sufficient design margins to remain operational in conditions moderately more severe than those considered in their design basis to avoid cliff edge effects to occur.~~Shall be designed to provide for adequate margins to avoid cliff edge in the event of conditions moderately exceeding those considered in the estimate of the design extension conditions.
Argentina	5.29 (d)	the interpretation of "moderately" is not objective, is subjective						

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
Japan	5.29 (d)	(d) Shall include adequate ~~sufficient~~ design margins to remain operational in conditions moderately more severe than those considered in their design basis taking account into ~~to avoid~~ cliff edge effects to occur.	**Completeness**. It isn't possible to avoid cliff edge effects themselves physically, so it is better to mention not to avoid but have adequate margins taking account into the effects.		x			See new proposal
Japan	**5.28d** **Not initially proposed by the Secretariat**	5.21 says "moderately exceeding those considered in their design basis", while 5.29(d) says "moderately more severe than those considered in their design basis".	**Consistency and Confirmation.** As implication of descriptions of these two seemed to be the same, the same description should be used to avoid confusions.	**x**				
USA 4	5.29(d)	5.29 (d) Shall include sufficient design margins to remain operational ~~in~~ under conditions moderately more severe than those considered in their design basis to avoid cliff edge effects to occur.	Language	x				
Canada	5.29 (d)	(d) Shall include sufficient design margins to remain operational in conditions moderately more severe than those considered in their design ~~basis~~ to avoid cliff edge effects to occur. Suggested rewording: (d) Shall be capable of performing in the environmental conditions pertaining to these design extension conditions, including design extension conditions in severe accidents, where appropriate and particularly to mitigate against cliff-edge effects"	It is very confusing to use the term "design basis" for events beyond the design basis. Delete the word "basis" It is uncertain how (d) is different from item (b) An alternate wording is suggested at left.		x			

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
ENISS	5.29 (d)	5.29 The analysis undertaken shall include identification of the features that are designed for use in, or that are capable[9] of preventing or mitigating, events considered in the design extension conditions. These features: … - d) ~~Shall include sufficient design margins to remain operational in conditions more severe than those considered in their design basis to avoid cliff edge effects to occur in a short time~~	DEC is part of the design. Clause 5.21, which applies to the design in general, is sufficient. At a minimum, cancel the wording “design basis” from the sentence : it is confusing because we speak of DEC			x	Agree with you, but 5.21 is actually for external hazards only.	
WNA	5.29 (d)	(d) Shall include sufficient design margins to remain operational in conditions moderately more severe than those considered in their design basis to avoid cliff edge effects ~~to occur~~ from occurring.	The change is required for proper grammar and to clarify the requirement.					See new proposal
Ukraine	5.29	It proposed to add one additional bullet to para. 5.29 related to the requirement for DEC system: (e) Shall be capable of the long-term performance of their functions in case of hindered access to the site caused by extensive destruction of the infrastructure by external hazards					This is the purpose of alinea c) of Requirement 5.29	
35.1, 46.16 and 46.17	**Requirement 68: Emergency power supply** **The emergency power supply at the nuclear power plant shall be capable of supplying the necessary power in anticipated operational occurrences and accident conditions, in the event of the loss of off-site power.**		**Requirement 68: Emergency power supply** **The emergency power supply at the nuclear power plant shall be capable of supplying the necessary power in anticipated operational occurrences and accident conditions, including ~~in~~ the event of prolonged~~the~~ loss of off-site power.**					**Requirement 68: Emergency power supply** **The emergency power supply at the nuclear power plant shall be capable of supplying the necessary power in anticipated operational occurrences and design basis accidents ~~conditions, including~~ in the event of ~~prolonged~~ the loss of off-site power. The design shall also include a dedicated power source to supply the necessary power in design extension conditions.** **See modifications of 6.44 a, 6.44 b and 6.45 a**

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
Argentina	**Requirement 68**	**A link with the para mentioning alternative and mobile power supplies should be established, or this concept added here.**						
USA 11	**Requirement 68**	The emergency power supply at the nuclear power plant shall be capable of supplying the necessary power in anticipated operational occurrences and design basis accident conditions in the event of the loss of offsite power. The design shall include provisions for design extension condition events involving the loss of all AC power.	The previous proposal inappropriately mixed design basis considerations with design extension condition considerations. It's very important that those two concepts are kept clear to future users of the document.		**x**			See new proposal
Canada	**Requirement 68**	Requirement 68: Emergency power supply The emergency power supply at the nuclear power plant shall be capable of supplying the necessary power in anticipated operational occurrences and accident conditions, including the event of prolonged loss of off-site power. Possible alternate wording: The emergency power supply at the nuclear power plant shall be capable of supplying the necessary power in anticipated operational occurrences and design basis accident conditions, including the event of prolonged loss of off-site power. In addition, the power supplies at the nuclear power plant shall include design features (either permanent or portable) to supply the	This section requires further clarity. It's not clear if it is referring to emergency power in the context of the installed Emergency Power System (EPS) which is seismically qualified and intended to address design basis earthquakes, or portable (EME) generators intended for BDBAs. This is an example of how the design basis and beyond design basis can get confused. The section should be revised to clearly delineate between the permanently installed Emergency Power System, which is part of the design basis, and portable generators which are deployed in the event of a complete site black out (including loss of EPS as in the case of Fukushima).		**x**		Requirement 68 applies to the permanently installed EPS, paragraph 6.45 a is added to address specifically the complete loss of the permanent EPS	See new proposal

LL	Current text	Proposal following NUSSC WG meeting held from 5 to 8 March 2013	Proposed Resolution for the Committees Meetings
		necessary power for preventing design extension conditions from arising, or, if they do arise, for controlling them and mitigating their consequences	

3) Prevention of severe accident/ Strengthen the plant design basis

LL	Current text	Proposal following NUSSC WG meeting held from 5 to 8 March 2013	Proposed Resolution for the Committees Meetings
21.1	2.13. Application of the concept of defence in depth in the design of a nuclear power plant provides several levels of defence (inherent features, equipment and procedures) aimed at preventing harmful effects of radiation on people and the environment, and ensuring adequate protection from harmful effects and mitigation of the consequences in the event that prevention fails. The independent effectiveness of each of the different levels of defence is an essential element of defence in depth at the plant and this is achieved by incorporating measures to avoid the failure of one level of defence causing the failure of other levels. There are five levels of defence:	New paragraph 2.13a segregated from 2.13 2.13. Application of the concept of defence in depth in the design of a nuclear power plant provides several levels of defence (inherent features, equipment and procedures) aimed at preventing harmful effects of radiation on people and the environment, and ensuring adequate protection from harmful effects and mitigation of the consequences in the event that prevention fails. ~~The independent effectiveness of each of the different levels of defence is an essential element of defence in depth at the plant and this is achieved by incorporating measures to avoid the failure of one level of defence causing the failure of other levels. There are five levels of defence:~~ …. 2.13 a The independent effectiveness of each of the different levels of defence is an essential element of defence in depth at the plant and this is achieved by incorporating measures to avoid the failure of one level of defence causing the failure of other levels. The independence of levels three and four is of particular relevance because of the severity of potential consequences should simultaneous failures of these two levels occur.	New paragraph 2.13a segregated from 2.13 2.13. Application of the concept of defence in depth in the design of a nuclear power plant provides several levels of defence (inherent features, equipment and procedures) aimed at preventing harmful effects of radiation on people and the environment, and ensuring adequate protection from harmful effects and mitigation of the consequences in the event that prevention fails. A defence in depth strategy based on the following 5 levels is widely accepted [5]. (1) (2) …. 2.13 a The independent effectiveness of each of the different levels of defence is an essential element of defence in depth at the plant and this is achieved by incorporating measures to avoid the failure of one level of defence causing the failure of other levels. ~~The independence of levels three and four is of particular relevance because of the severity of potential consequences should simultaneous failures of these two levels occur~~ Independence shall be implemented as far as practicable with a particular attention for levels three and four because of the enhanced severity of overall consequences if failures of these two levels occur simultaneously.

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
Argentina	**2.13** **2.13a**	This para is not a requirement, it provides an explanation so, is it necessary? Ditto					**Yes it is.**	
Finland	**2.13**	Add a sentence of the end of the remaining paragraph 2.13: There are five levels of defence.	**For clarity**	**x**				
Japan	**2.13**	The last sentence 'There are five levels of defence:' must be kept with modifying as follows; "It is widely recognized that there are five levels of defence for NPP.".	The number of defence levels could be varied according to the graded approach. However, it is widely recognized that NPP is protected by five layers of defence.	x				
Japan	2.13 a	**Add** the following after the last line. These levels three and four correspond to the provisions for the design basis accidents and the design extension conditions without core melt, and the provisions for the design extension conditions with core melt, respectively.	It is necessary to define the role of levels three and four, in order to clarify the requirements concerning the independence of levels three and four.		x		See new proposal for 2.13 (4)	
USA	2.13a	Modify Para 2.13 to read: The independent effectiveness of each of the different levels of defence is an essential element of defence in depth at the plant and this is achieved by incorporating measures to avoid the failure of one level of defence causing the failure of other levels. The independence of levels three and four is of	Clarity/Language.	x				

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
		particular relevance because of the enhanced severity of overall ~~potential~~ consequences if ~~should simultaneous~~ failures of these two levels occur simultaneously.						
Canada	2.13a	2.13 a The independent effectiveness of each of the different levels of defence is an essential element of defence in depth at the plant and this is achieved by incorporating measures to avoid the failure of one level of defence causing the failure of other levels. ~~The independence of levels three and four is of particular relevance because of the severity of potential consequences should simultaneous failures of these two levels occur.~~	Requirement 7 already covers the independence of levels of defence in depth and includes “to the extent practicable.” Complete independence of levels 3 and 4 is not realistically achievable and is probably no more important than the independence of levels 2 and 3. Containment is required to demonstrate level 3 defence in depth for major classes of accident such as LOCA and steam line break. Containment is also required for level 4 defence in depth for all severe accident sequences. Provision of two independent containments, one for level 3 and another for level 4 is impracticable. The last sentence should be removed.			x		See new proposal

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013	Proposed Resolution for the Committees Meetings
WNA	2.13a	2.13a The independent effectiveness of each of the different levels of defence is an essential element of defence in depth at the plant and this is achieved by incorporating measures to avoid the failure of one level of defence causing the failure of other levels. The independence of levels three and four is of particular relevance because of the severity of potential consequences should simultaneous failures of these two levels**, resulting from a credible situation,** occur.	One cannot claim in a deterministic manner that level 3 and level 4 will fail simultaneously (or concurrently), otherwise, independence is impossible to demonstrate. Independence can only be ensured to a certain extent.	See new proposal
25.2	**Requirement 17: Internal and external hazards** **All foreseeable internal hazards and external hazards, including the potential for human induced events directly or indirectly to affect the safety of the nuclear power plant, shall be identified and their effects shall be evaluated. Hazards shall be considered for determination of the postulated initiating events and generated loadings for use in the design of relevant items important to safety for the plant.** 5.18 Items important to safety shall be designed and located to minimize, consistent with other safety requirements, the likelihood of external events and their possible harmful consequences.		**Requirement 17: Internal and external hazards** **All foreseeable internal hazards and external hazards, including the potential for human induced events directly or indirectly to affect the safety of the nuclear power plant, shall be identified and their effects shall be evaluated. Hazards shall be considered when establishing plant layout, ~~for~~ determining~~ation~~ the postulated initiating events and generating loadings for use in the design of relevant items important to safety for the plant.** 5.15 a (after Requirement 17) Items important to safety shall be designed and located, considering other safety implications, to limit their exposure to hazards and possible harmful consequences of their failures. ~~5.18 Items important to safety shall be designed and located to minimize, consistent with other safety requirements, the likelihood of external events and their possible harmful consequences.~~	**All foreseeable internal ~~hazards~~ and external hazards, including the potential for human induced events directly or indirectly to affect the safety of the nuclear power plant, shall be identified and their effects shall be evaluated. Hazards shall be considered when establishing plant layout, determining the postulated initiating events and generating loadings for use in the design of relevant items important to safety for the plant.** 5.15 a (after Requirement 17) Items important to safety shall be designed and located~~,~~ ~~considering other safety implications,~~ to limit their exposure to hazards and possible harmful consequences of their failure~~s~~.

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
Japan	Req.17 L3	**Hazards shall be considered, as well as in ~~when~~ establishing plant layout, for determining the postulated initiating events and generated loadings for use in the design of relevant items important to safety for the plant.**	**Completeness**. Internal and external hazards are used for determination of PIEs and relevant loads on the items important to safety for the plant, in designing them, as well as plant layout.			**x**	Preventing the effects of hazards as far as possible is the priority in the design of a NPP. The localization of the buildings at the site and the layout of equipment inside the buildings shall be defined taking into account the effects of hazards. So Requirement 17 is correctly phrased.	
Argentina	**Requirement 17** **5.15a**	**All foreseeable internal ~~hazards~~and external hazards, including the potential for human induced events directly or indirectly to affect the safety of the nuclear power plant, shall be identified and their effects shall be evaluated. Hazards shall be considered when establishing plant layout, determining the postulated initiating events and generating loadings for use in the design of safety systems and systems important to safety ~~relevant items important to safety for the plant~~.** Items important to safety shall be designed and located, ¿considering other safety implications? (to be clarified), (to limit their exposure to hazards and possible harmful consequences of their failures not clear, is it referred to radiation exposure or to what?).		**x**			This requirement also applies to individual components" Items important to safety" is correct. Other safety implications are addressed by other requirements. So here, for clarity, it may be deleted	
WNA	**5.15a**	5.15 a (after Requirement 17) Items important to safety shall be designed and located~~, considering other safety implications,~~ to limit their exposure	This added requirement is worded awkwardly. I suggest the modified wording be used for clarity.	**x**				

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
		to hazards and to prevent the possible harmful consequences of their failures~~s~~.						
Japan	5.15a/ L1-2	Items important to safety shall be designed and located ~~considering other safety implications,~~ to ~~limit~~ minimize, consistent with other safety requirements, the likelihoold of external ~~their exposure to~~ events hazards and their possible harmful consequences ~~of their failures~~.	**Completeness**. Consisted with expression in the same as para.5.18(old).		**x**			See new proposal
19.1	5.20. The design shall be such as to ensure that items important to safety are capable of withstanding the effects of external events considered in the design, and if not, other features such as passive barriers shall be provided to protect the plant and to ensure that the required safety function will be performed.		5.20 The design shall be such as to ensure that those items that are necessary to fulfil the fundamental safety functions ~~important to safety~~are capable of withstanding the effects of external hazards considered in the design basis, and if not, other features such as passive barriers shall be provided to protect those items ~~the plant~~and to ensure that the required safety function will be performed.					5.20 The design shall be such ~~as to ensure~~that ~~those~~items ~~that are~~necessary to fulfil the fundamental safety functions are either capable of withstanding the effects of external hazards considered in the design~~basis, and if not, or~~ protected from such effects by other features such as passive barriers ~~shall be provided to protect those items and to ensure that the required safety function will be performed~~.
Argentina	**5.20**	The design shall be such as to ensure that those items that are necessary to fulfil the fundamental safety functions are capable of withstanding the effects of external hazards considered in the design basis, (and if not this simple phrase imply that the design bases were not well chosen! Be care, in this context severe accidents are not considered), other features such as passive barriers shall be provided to protect those items and to ensure that the required safety functions will be performed.					Items are usually not designed to withstand the effects of the external hazards but are protected from these effects by buildings. Main exception is for earthquake.	

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
France 13	**5.20**	5.20 The design shall be such as to ensure that those items that are necessary to fulfil the fundamental safety functions ~~important to safety~~ are either capable of withstanding the effects of external hazards considered in the design basis of the plant~~, and if not,~~ or protected from such effects by other features such as passive barriers ~~shall be provided to protect those items the plant and to ensure that the required safety function will be performed~~.	**Clarification**	**x**				
Japan	**5.20**	The design shall be such as to ensure that those items that are necessary to fulfil the fundamental safety functions are capable of withstanding the effects of external hazards considered in the design basis, and if not, other features such as passive barriers shall be provided to protect those items and to ensure that the required safety function will be performed.	**Confirmation**. What does 'if not' refer to in this draft exactly? If it is unclear, an appropriate modification should be necessary.		**x**			**See new proposal**
Canada	**5.20**	The design shall be such as to ensure that those items that are necessary to fulfill the fundamental safety functions are capable of withstanding the effects of external hazards considered in the design ~~basis~~, and if not, other features such as passive barriers shall be provided to protect those items and to ensure that the required safety function will be performed.	This clause covers event both within the design basis of the plant and Design Extension Conditions. It is very confusing to use the term "design basis" for events beyond the design basis. Delete the word "basis"	**x**				**See new proposal**

LL	Current text	Proposal following NUSSC WG meeting held from 5 to 8 March 2013	Proposed Resolution for the Committees Meetings
19.1	**External hazards** 5.17. The design shall include due consideration of those natural and human induced external events (i.e. events of origin external to the plant) that have been identified in the site evaluation process. Natural external events shall be addressed, including meteorological, hydrological, geological and seismic events. Human induced external events arising from nearby industries and transport routes shall be addressed. In the short term, the safety of the plant shall not be permitted to be dependent on the availability of off-site services such as electricity supply and fire fighting services. The design shall take due account of site specific conditions to determine the maximum delay time by which off-site services need to be available.	5.17. The design shall include due consideration of those natural and human induced external events (i.e. events of origin external to the plant) that have been identified in the site evaluation process. Natural external events shall be addressed. ~~including meteorological, hydrological, geological and seismic events.~~ Human induced external events arising from nearby industries and transport routes shall be addressed. Causality and likelihood shall be considered in postulating potential concurrent hazards. In the short term, the safety of the plant shall not be permitted to be dependent on the availability of off-site services such as electricity supply and fire fighting services. The design shall take due account of site specific conditions to determine the maximum delay time by which off-site services need to be available.	5.17. The design shall include due consideration of those natural and human induced external events (i.e. events of origin external to the plant) that have been identified in the site evaluation process. Natural external events shall be addressed.~~.~~ Human induced external events arising from nearby industries and transport routes shall be addressed. In the short term, the safety of the plant shall not be permitted to be dependent on the availability of off-site services such as electricity supply and fire fighting services. The design shall take due account of site specific conditions to determine the maximum delay time by which off-site services need to be available.

Poland 5	**Addendum to SSR-2/1** Paragraph 5.17	5.17. … Natural external events shall be addressed, including in particular meteorological, hydrological, geological and seismic events.	This deleted (highlighted) fragment of the sentence should be brought back, with adding “in particular”.			X	The list is not exhaustive and it is better to refer to NS-R-3	
Argentina	**5.17**	5.17. The design shall include due consideration of those natural and human induced external events ~~(i.e. events of origin external to the plant)~~ that have been identified in the site evaluation process. ~~Natural external events shall be addressed.~~ ~~including meteorological, hydrological, geological and seismic events.~~ Human induced external events arising from nearby industries and transport routes shall be addressed. Causality and likelihood shall be considered in postulating potential concurrent hazards. In the short term, the safety of the plant shall not be permitted to be dependent on the						

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
		availability of off-site services such as electricity supply and fire fighting services. The design shall take due account of site specific conditions to determine the maximum delay time by which off-site services need to be available. Consideration to both internal and external malevolent events is not given, NSGC viewpoint is advisable.						
Japan	**5.17**	~~Causality and likelihood shall be considered in postulating~~ Ppotential of concurrent hazards shall be considered taking into account its frequency and consequence to the plant.	**Better wording.** **Confirmation** the difference between 'simultaneous failures' (2.13a) and 'concurrent hazards'.			X	The initial text is correct	
29.1	**Requirement 53: Heat transfer to an ultimate heat sink** **Systems shall be provided to transfer residual heat from items important to safety at the nuclear power plant to an ultimate heat sink. This function shall be carried out with very high levels of reliability for all plant states.**		6.19a (after Requirement 53) If the availability of the ultimate heat sink cannot be demonstrated for all potential conditions generated by external hazards, an alternative ultimate heat sink that it is not impaired by the same hazards shall be provided.					~~6.19a (after Requirement 53)~~ ~~If the availability of the ultimate heat sink cannot be demonstrated for all potential conditions generated by external hazards, an alternative ultimate heat sink that it is not impaired by the same hazards shall be provided.~~ 6.19a (after Requirement 53) If a high level of reliability of the residual heat transfer to the ultimate heat sink cannot be demonstrated for all potential conditions generated by external hazards, alternative means shall be provided. These means, including the use of a different heat sink and the necessary associated features, shall be located and designed so that external hazards cannot result in the loss of the residual heat removal function..

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
France 14	**6.19a**	A footnote might be added to give an example of the atmosphere as the ultimate heat sink which cannot be lost.						
Switzerland	**6.19a**	Add at the end: This applies to both the reactor and the spent fuel pool.	After Fukushima SFP-cooling should also be provided by diversified sources of cooling water.					See new proposal
Germany **WASSC**	6.19a	"If the availability and effectiveness of the ultimate heat sink cannot be demonstrated for all potential conditions generated by external hazards, an alternative ultimate heat sink that it is not impaired by the same hazards shall be provided."	Clarification.					See new proposal
Japan	6.19a	If the availability and effectiveness of the heat transport systems and the ultimate heat sink cannot be demonstrated for all potential conditions generated by external hazards, an alternative measures and ultimate heat sink that ~~it is~~ are not impaired by the same hazards shall be provided.	**Essential.** Ultimate heat sink should be air, sea, lake or river that are always available of sinking heat. The point which should be discussed here is the heat transport systems to the ultimate heat sink. While the contents of para. 6.19a is foreseeable from Req.24 Common cause failure and Req.25 Single failure criterion, a proposal of modification is provided.		x			See new proposal
USA 6	6.19a	Recommend deleting the new requirement paragraph.	As currently stated, the requirement is too unfocused to be practical. The phrase "all potential conditions generated by external hazards" is too overstated to be practically implementable. Given the other changes occurring in the document especially with respect to AC power and containment heat removal and the current Requirement 53, this addition is probably not needed. Also, it				The heat transfer to the ultimate heat sink shall not be lost in the event of DBA or hazard as defined in the site characterization. The issue is here for hazards exceeding the site characterization, since the needs in case of DEC are identified with the DEC selection	

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013	Proposed Resolution for the Committees Meetings
			needs to be clarified whether this is a DBA consideration or a DEC consideration.	
Canada	6.19a	If the availability of the ultimate heat sink cannot be demonstrated for all potential and credible conditions generated by external hazards, an alternative ultimate heat sink that it is not impaired by the same hazards shall be provided.	Is 'potential' the right word? It seems to imply that incredible cases must also be considered. In other words, a backup ultimate heat sink is always mandatory. Conditions must have credibility. Maybe re-state as ".,..for all potential and credible conditions generated…"	No better suggestion
35.1, 46.16 and 46.17	**Requirement 68: Emergency power supply**		6.44a The design of the emergency power supply shall be such that relevant safety features for design extension conditions can be supplied by dedicated back-up power system independent (including DC power) and physically separated from the one used in case of loss of off-site power to avoid significant core or spent fuel degradation. The same system shall be able to supply the power necessary to mitigate the consequences of a severe accident should it occurred. The dedicated back-up power system connection time shall be consistent with battery autonomy. 6.44 b (new) The design of the emergency power supply shall be such that relevant safety features for design extension conditions could be powered by any of the available power source.	**New proposal** 6.44 a The dedicated power source shall be capable of supplying the necessary power to prevent significant core and spent fuel degradation in the event of the loss of the off-site power combined with the failure of the emergency power source for design basis accidents. 6.44 b The dedicated power source shall be capable of supplying power to the equipment necessary to mitigate the consequences of design extension conditions involving a loss of the off-site power combined with the failure of the emergency power source for design basis accidents. 6.44 c Equipment necessary to mitigate the consequences of a core melt accident shall be supplied by any of the power sources. 6.44 d The dedicated power source shall be independent and physically separated from the emergency power source for design basis accidents. The dedicated back-up power system connection time shall be consistent with battery autonomy. ??? 6.44 e Any short term actions necessary to mitigate the consequences of design extension conditions shall be able to be completed despite the loss of the AC power sources combined with the loss of the DC source for design basis accidents

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013				Proposed Resolution for the Committees Meetings
Poland 6	**Addendum to SSR-2/1** Requirement 68, Paragraph 6.44a (new)	6.44a (new) … The dedicated back-up power system connection time shall be consistent with ~~battery autonomy~~ safety requirements.	This is not only a question of timely supplying DC receivers but also AC receivers of a vital importance for safety.		x		See new proposal
Argentina	**6.44a**	The design of the emergency power supply shall be such that relevant safety features for design extension conditions (again, what means extension conditions?) can be supplied by dedicated back-up power system independent (including DC power) and physically separated from the one used in case of loss of off-site power (but located on a site where the effects of such conditions doses not affect it) to avoid significant core or spent fuel degradation. The same system shall be able to supply the power necessary to mitigate the consequences of a severe accident should it occurred. The dedicated back-up power system connection time shall be consistent with battery autonomy. Besides, the batteries should be provided with autonomous chargers.					

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013				Proposed Resolution for the Committees Meetings
Finland	**6.44a**		The requirement should be clarified. Would it not be sufficient to have some alternative way of keeping the inventory in the spent fuel pool. It could be also other than electric equipment.			The one does not preclude the other	
France 15	**6.44a (new)**	6.44a (new) To avoid significant core or spent fuel degradation, The design of the emergency power supply shall be such that relevant safety features for design extension conditions can be supplied by a dedicated back-up power system (including DC power where needed) independent ~~(including DC power)~~ and physically separated from the one used in case of loss of off-site power ~~to avoid significant core or spent fuel degradation.~~ ~~The same~~ This dedicated system shall be able to supply the power necessary to mitigate the consequences of a severe accident should it occurred. The dedicated back-up power system connection time shall be consistent with battery autonomy.	Clarifications		x		See new proposal
Japan	**6.44a**	The design of the emergency power supply including equipment on the electrical pathway shall be such that relevant safety features for design extension conditions can be supplied by dedicated back-up power system (including DC power) independent ~~(including DC power)~~, diversified and physically separated from the one used in case of loss of off-site power to avoid significant core or spent fuel degradation. …	**Clarification**. Clarify the electric pathway. **Editorial.** Misplaced in ‘including DC power’. **Essential.** Specified diversity, as well as independency and physical separation.			Diversity is a mean to achieve the requested reliability. Reliability is now added in 6.43	

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013				Proposed Resolution for the Committees Meetings
USA 12	**6.44a and b**	…relevant safety features for design extension conditions can be supplied by dedicated back-up power system independent ~~(including DC power)~~…	The revision is not fully consistent with the U.S. approach because it requires dedicated backup for loss of ac or dc power. It is also very confusing as to what this paragraph is trying to accomplish. My sense is that it is describing what is(in NRC terminology) the alternate AC source provided for SBO conditions. If so, the paragraph has several shortcomings. The best approach would be to review section 8 of DS 430 which is on Alternate AC sources and write a much shorter requirement that complements this section. In its current form, it is difficult to understand what value 6.44b adds and how it would be implemented.		x		Correct, this alternate power source is for SBO and shall have the possibility to supply power to equipment necessary in DEC DS 430, which is a Safety Guide, will provide more details, but the requirement shall be in SSR 2/1. See new proposals	

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013				Proposed Resolution for the Committees Meetings
ENISS	**6.44a**	The design of the emergency power supply shall be such that relevant safety features for design extension conditions can be supplied by dedicated back-up power system independent (including DC power) and physically separated from the one used in case of loss of off-site power to avoid significant core or spent fuel degradation. The same system (or a dedicated system) shall be able to supply the power necessary to mitigate the consequences of a severe accident should it occurred. The dedicated back-up power system connection time shall be consistent with battery autonomy.	The requirement that the same system is used for prevention and mitigation is contradictory with general requirement of independance. This possibility should be kept as in many cases it is reasonable, but a dedicated system should be an authorized option. Alternatively cancel the full sentence because design extension conditions used in the 1st sentence encompasses severe accidents used in the 2nd			Independence may be not implemented when it does not improve safety. Having several possibilities to provide power to equipment necessary to mitigate the consequences of a core melt accident is preferable.	
WNA	**6.44a**	6.44a The design of the emergency power supply shall be such that relevant safety features for design extension conditions can be supplied by dedicated back-up power system independent (including DC power) and physically separated from the one used in case of loss of off-site power to avoid significant core or spent fuel degradation. The same system shall be able to supply the power necessary to mitigate the consequences of a severe accident should it occurred. The dedicated back-up power system connection time shall be consistent with battery autonomy.	typo				

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
ENISS	**6.44b**	6.44b The design of the emergency power supply shall be such that relevant safety features for design extension conditions could be powered by any of the available power sources."(e.g. through mobile connection)"	This requirement is in contradiction with general principle of independance of levels of Did. If it is made using cross-ties in systems, this could introduce complexity and loss of reliability. So we suggest to add the possibility of mobile connection.			x		See new proposal
WNA	**6.44b**	6.44b The design of the emergency power supply shall be such that relevant safety features for design extension conditions could be powered by any suitable ~~of the~~ available power sources (e.g. fixed (including from other units in case of a multiple units' site) or mobile (on or off site)) in a reasonably practicable manner.	The discussion during the NUSSC WG meeting in March concluded that effectively, it should be possible to take credit of all available sources on the site. However, they have to be **suitable.** And this should be done easily, in a reasonably practicable manner. One cannot require that any source could supply any DEC consumer (e.g. a 12V battery to supply a big pump would not make sense or this would require more than unreasonably practicable provisions).		x		6.44 b is restricted to the permanent EPS (see Canada). Emergency power supply from neighbouring units is addressed in Requirement 33, para 5.33 and in 6.45 a with mobile sources	
42.1	6.68. For reactors using a water pool system for fuel storage, the design of the plant shall include the following: a) Means for controlling the temperature, water chemistry and activity of any water in which irradiated fuel is handled or stored; b) Means for monitoring and controlling the water level in the fuel storage pool and means for detecting leakage; c) Means for preventing the uncovering of fuel assemblies in the pool in the event of a pipe break (i.e. anti-siphon measures).		6.68. For reactors using a water pool system for fuel storage, the design of the plant shall prevent the fuel uncover in operational and accident conditions and include the following: a) Means for monitoring and controlling the water level and the temperature in all operational and accident conditions; b) Means for monitoring the activity in all operational and accident conditions; c) Means for monitoring chemistry in operational conditions; d) Means for preventing the uncovering of fuel assemblies in the pool in the event of a pipe break (i.e. anti-siphon measures). e) Means to facilitate the use of alternative/mobile equipment to ensure the long term cooling of the fuel in case of events not considered in the design.					6.68 For reactors using a water pool system for fuel storage, the design shall : 1) provide the necessary spent fuel pool cooling capabilities to prevent the uncovering of the fuel assemblies in operational states and accident conditions relevant for the spent fuel pool, 2) provide features to prevent the uncovering of the fuel assemblies in the event of a leak or pipe break 3) include the following: (a) Means for monitoring and controlling the water temperature in operational states and accident conditions relevant for the spent fuel pool; (b) Means for monitoring the water level in operational states and accident conditions relevant for the spent fuel pool l; (c) Means for monitoring the activity in water and air

LL	Current text	Proposal following NUSSC WG meeting held from 5 to 8 March 2013	Proposed Resolution for the Committees Meetings
			in operational states and accident condition relevant for the spent fuel pool s; (d) Means for monitoring water chemistry in operational states; (e) Means to facilitate the use of alternative/mobile equipment to ensure the long term cooling of the fuel in case of events not considered in the design.

Argentina	**6.68**	**Add** (f) The spent fool pool shall be provided with adequate means for preventing damage of fuel due to debris fall inside the pool as a consequence of severe accidents affecting civil or mechanical structures.				**x**	Shall be prevented by the design of the structures	
Germany WASSC	6.68	"For reactors using a water pool system for fuel storage, the design of the plant shall prevent the fuel uncover in operational states and accident conditions and include the following: (a) Means for monitoring and controlling the water level and the temperature in all operational states and accident conditions; (b) Means for monitoring the activity in water and air in all operational states and accident conditions; (c) Means for monitoring water chemistry in operational ~~conditions~~ states; …"	With regard to the plant states considered in the design stage, the terminology used in SSR-2/1 distinguishes between 'operational states' and 'accident conditions' (see Section "Definitions" in SSR-2/1). (b), (c): Clarification with regard to the subjects of monitoring.	x				
Canada	6.68	6.68. For reactors using a water pool system for fuel storage, the design of the plant shall ~~prevent the fuel uncover in operational and accident conditions and~~ include the following: b) Means for monitoring and controlling the water level and the temperature in all operational and accident conditions;	Grammar needs to be corrected. Added text in opening sentence: This new text is unnecessary and creates problems with the logic. The added text repeats item d). Items b) and c) do nothing to prevent fuel uncovering.			x	Prevent fuel uncovering is a good decoupling criterion to avoid further significant further safety issues and should indicated in SSR 2/1 as limiting the fuel clad temperature in case of a LOCA is also a good decoupling criterion.	

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
		c) Means for monitoring the activity in all operational and accident conditions; d) Means for monitoring chemistry in operational conditions; e) Means for preventing the uncovering of fuel assemblies in the pool ~~in the event of a pipe break (i.e. anti-siphon measures)~~. f) Means to facilitate the use of alternative/mobile equipment to ensure the long term cooling of the fuel in case of events not considered in the design.	Remove the new text. In item (d) The text as written implies that it is ok to uncover the fuel as long as it is not caused by a pipe break. Gross leakage of the pool itself appears to be acceptable. Delete the highlighted text.					
Japan	6.68	**Add** after the last sentence. Accident conditions of the spent fuel pool shall be derived on the basis of a combination of deterministic assessment and probabilistic assessment.	**Clarification.** Accident conditions of the spent fuel pool are not defined explicitly in the definition of the plant states.			x	Requirement 16 para 5.5 is also relevant for the design of the spent fuel pool.	
USA 14	6.68	Changes as indicated below: For reactors using a water pool system for fuel storage, the design of the plant shall prevent the fuel uncover (delete) provide for spent fuel pool cooling capabilities in operational and accident conditions and include the following: (a)means for monitoring and controlling (the temperature in all operational and design basis accident conditions; (B) means for monitoring the level in operational and accident conditions including identified design extension conditions; (c) means for monitoring the activity in all operational and design basis accident conditions…	Current wording was not clear with respect to DBA capabilities and design extension condition capabilities. Also, in design extension conditions cooling of the fuel can be assured with sprays and not necessarily having water level.		x			

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
Finland	**6.68 a and b**	(a) Means for monitoring and controlling the water level and the temperature in operational and accident conditions; (b) Means for monitoring the activity in operational and accident conditions; …….	**Delete "all"**	**x**				
Japan	**6.68 b and c**	b) Means for monitoring the activity in water and the atmosphere in all operational and accident conditions; c) Means for monitoring water chemistry in operational conditions.	**Clarification** for monitoring objects for activity and chemistry.	**x**				
Switzerland	**6.68d**	d) Means for preventing the uncovering of fuel assemblies in the pool in the event of a pipe break (i.e. anti-siphon measures) or liner leakage.	Recent calculations in Swiss power plants show that a liner leakage is a serious issue.		**x**			See new proposal
Japan	**6.68e**	(e) Means to facilitate the use of alternative/mobile equipment to ensure the long term cooling of the fuel in order to prevent the progression of accidents~~. in case of events not considered in the design~~.	**Better wording.** "not considered in the design" is vague, so it should be considered as "design basis accident" for SFP.			**x**	DEC category which is beyond the category of the design basis accidents is included in the design, so keeping "not considered in the design" is preferable.	

25.2	5.55 The design shall support operating personnel in the fulfilment of their responsibilities and in the performance of their tasks, and shall limit the effects of operating errors on safety. The design process shall pay attention to plant layout and equipment layout, and to procedures, including procedures for maintenance and inspection, to facilitate interaction between the operating personnel and the plant.	*5.55 The design shall support …* *… The design process shall pay attention to plant layout and equipment layout, and to procedures, including procedures for maintenance and inspection, and to facilitate interaction between the operating personnel and the plant in operational states and accident conditions.*	5.55 The design shall support … … Attention shall be paid to the design of the layout of equipment to facilitate their accessibility in operational states (periodic tests, inspection and maintenance) and in accident conditions.

LL	Current text		Proposal following NUSSC WG meeting held from 5 to 8 March 2013					Proposed Resolution for the Committees Meetings
Japan	5.55	The design process shall pay attention to plant layout and equipment layout, and to procedures, including procedures for maintenance, ~~and~~ inspection, and preventing and mitigating actions during accident conditions, to facilitate interaction between the operating personnel and the plant in operational states and accident conditions.	**Completeness.** Add actions consisted with operating states for accident conditions.		x			See new proposal
Japan	PREFACE 7th para./2nd bullet On part not subject fo comment	'Avoiding significant release of radioactive materials to the environment ~~long term off-site contamination~~ through severe accident mitigation'.	'Long term off-site contamination' does not mean the amount and severity of off-site contamination. It would be better to replace with 'significant release of radioactive materials to the environment'.			x	The terminology "avoiding off site contamination*" was used by the Contracting Parties during the 2nd extraordinary meeting (cf Final summary Report) to express in a comprehensive manner what the global safety objective for new plants should be. *May be the CPs were too optimistic when they fixed this terminology, and today some MS agree to replace it by "avoiding long term off site contamination*" which seems more reasonable and achievable. So it is better to keep it in the Preface, and this safety objective is achieved by avoiding significant releases.	