DS489 Storage of Spent Nuclear Fuel

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
1.	General	Clarify usage of terms "containment" and "confinement" in accordance with SSR-4 or related safety standards. {4}	Clarification. For example, there exist "containment barriers" (I.40, I.62) and "confinement barriers" (6.17, I.22). This makes confusion.	Accepted			
2.	General comment	It is recommended to add a section for new and revised definitions differ from those in the IAEA Safety Glossary (2007 Edition). {6}			We use footnotes for this purpose		Additional section will change the structure of the document that is out of the DPP. Glossary 2018 to be published soon.
3.	Various	Licence v. license {8}	Consistency	Accepted			
4.	1.5 (p 7)	The basic safety aspects for storage of spent fuel are applicable for the storage of spent from research reactors as well as from power reactors. An approach should include ~~be adopted that takes account of~~ the differences between the fuel types (e.g. lower heat generation, higher enrichment and cladding materials that are less corrosion resistant) when considering confinement, heat removal, criticality control, radiation shielding and retrievability, environmental impacts. {14}			An approach should be adopted considering the differences between the fuel types…		

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5.	1.7/lines 5 and 6 and Page 41 /First line	"The amendment is focused on the following topics: ~~(a) strengthening accident management;~~ (b) protection against …" "~~To improve accident management capabilities,~~ The design should include features to …" {6}	Considering the abovementioned comment, according to IAEA Safety Glossary 2007: "The term *accident management* is applied only to ***beyond design basis accidents***, rather than to all non-operational states."			Rejected	Glossary 2007 to be updated soon. This statement declares scope of this revision and is taken "as is" from the DPP, approved by CSS.
6.	1.7 (p. 8)	and (c) practical elimination of possibility of conditions arising that could lead to ~~an~~ early releases of radioactive material or to large releases of radioactive material {14}	The wording should be consistent with the wording of IAEA requirements (notably SSR-4)	Accepted			
7.	1.9	This safety guide covers spent fuel nuclear fuel storage facilities that may be either collocated with other nuclear facilities (such as a nuclear power plant, research reactors, reprocessing plant or disposal facilities)… (the remaining text of the paragraph is unaffected) {15}	The original text implicitly includes the collocated storage surface facilities with a disposal installation It is of interest to make explicit mention in the text to this case. That is, DS489 covers surface storage installations/facilities in support of a SNF disposal facility. Typically, a disposal facility will require storage of SNF for potentially long time span e.g.: to allow for cooling, progression on the construction of the disposal facility, etc…			Reject	The use of "such as" doesn't exclude collocation with disposal facilities. There isn't a need in specific focusing on collocation with disposal as soon as no paragraphs are specifically addressed to such situation in DS489.

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8.	1.12/ line 13 and ANNEX IV	~~Annex IV provides an overview of related IAEA Safety Standards.~~ ANNEX IV should be deleted. {4}	Duplication with "REFERENCES". All of the document listed here are referred as "REFERENCES".			Reject	This will change the structure of the document that is against DPP. To be considered in full scale revision.
9.	2.6/2	Learning attitude towards protection and safety {8}	Reads better	Accepted			
10.	2.6	In each spent fuel management step, a safety culture that encourages a questioning and learning attitude…" (the remaining text of the paragraph is unaffected) {15}	The proposed new text is comprehensive of all steps without distinction. This contributes to match the relevance of all steps.	Accepted			
11.	3.9/3 (p.13)	…but isn't limited with: implementation of the management system for the ~~processing,~~ handling and storage of spent fuel; development of operating limits, controls and conditions; performance of the safety assessment, documentation and use of the safety case.{7}	The "processing" is not related to "Storage of Spent Fuel," but may be misunderstood as "reprocessing" or "disposal."	Accepted			
12.	3.9 (p 13)	The regulatory body should provide guidance to operating organizations on how to meet requirements relating to the safe storage of spent fuel, that includes but isn't limited with: implementation of the management system for the processing, handling and storage of spent fuel; development of operating limits, controls and conditions; performance of the safety		Accepted			

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		assessment, quantifiable performance indicators, documentation and use of the safety case. {14}					
13. (@)	3.11/8	Shutdown v. shut down {8}	Consistency within the document		To be addressed during editing		Noun vs verb. To be addressed in editing.
14.	3.12	In addition, it should include observing and evaluating some of the exercises of the operating organizations in line with [20]. {8}	Add clarity to the sentence, the word "the" needs to be added.	Accepted			
15.	3.12/9	some of the exercises {8}	Reads better	Accepted			
16.	3.12/10	with Ref. [20]. {8}	Missing word	Accepted			To be in line with publishing rules
17.	3.12 (p 13)	General recommendations for regulatory inspection and enforcement actions relating to spent fuel storage facilities are provided in Ref. [16]. The regulatory body should periodically verify that the key aspects of the operation of the storage facility meet the requirements of the national legal system and facility license conditions, such as those relating to the keeping of records on inventories and material transfers, compliance with acceptance criteria for storage, maintenance, inspection, testing and surveillance, operational limits and conditions, physical protection of nuclear material and arrangements for on-site emergency preparedness and response.	"Audit" is not an activity of the regulatory body. Replace audit by inspection.		Such verification may be carried out, for example, by routine inspections of the spent fuel storage facility and the operating organization, review and assessment of the safety case. In addition, it should include		

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		Such verification may be carried out, for example, by routine inspections of the spent fuel storage facility, ~~audits~~ inspections of the operating organization and review and assessment of the safety case. In addition, it should include observing and evaluating some of exercises of the operating organizations in line with [20]. The regulatory body should verify that the necessary records are prepared and that they are maintained for an appropriate period of time. A suggested list of records is included in Ref. [17]. {14}			observing and evaluating some of the exercises of the operating organizations in line with Ref. [20]		
18.	3.14 (b)	A licence issued for a specified time period with the possibility for its renewal after expiry. In such a case consequences of an expired license should be analyzed before granting a time limited license. {9}	Essential! An interim storage for a limited time period could cause regulatory difficulties in practice. If the license expires and could not be prolonged (e.g. existing storage is not in line with current safety standards) and transfer of spent fuel to another storage facility or repository is not possible in the country a situation might occur where the spent fuel has to be stored in a formally unlicensed storage.			Rejected	It doesn't matter what is the type of license. If the regulation is changed the safety case should be revised that might require some facility improvements.

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19.	3.18 Line 4	The operating organization should use the safety assessment that supports the safety case to establish specific operational limits and conditions …{2}	Specification of the safety assessment in line with requirement 13 of GSR Part 5 on p23 of this DPP.		As part of the safety case the operating organization should use the safety assessment to establish specific operational limits and conditions to be approved by the regulatory body		Safety case can include several safety assessments that should support it. But this Para is about using the SA as an instrument to establish specific OLC. The following wording is proposed to underline that the SA to be performed within the SC.
20.	3.21	The operating organization should establish the requirements for training and qualification of its staff and contractors, including for initial training and periodic refresher training. {9}	Clarification	Accepted			Question to editors. Might be accepted
21.	3.25	"The operating organization should establish a process on how to analyze, make and approve modifications to the spent fuel storage facility, storage conditions, or the spent fuel to be stored, which is commensurate with the significance of the modifications..." (the remaining text of the paragraph is unaffected) {15}	It is within the reg. body/government competences to grant an authorization. In order to avoid confusion, it is preferred to reserve the verb "to authorize" to a regulatory process. For the case of minor modifications, and because of an analysis of the modification it may be	Accepted			

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			possible for the operating organization to approve the modification without the need of a specific authorization.				
22. (@)	3.26	The operating organization is required to allocate and maintain appropriate financial resources to undertake all necessary tasks throughout the lifetime of the facility, including its decommissioning {15}	The distribution of responsibilities in order to ensure adequate financing is threefold. The Government is responsible to "establish a mechanism for providing adequate financial resources…" typically by setting up a regulatory framework (para 3.4); it is responsibility of the spent fuel generator (para. 4.7) to "… establish an appropriate funding mechanism." according to the "Polluters pay" principle; finally (para 3.26) it is responsibility of the operating organization to maintain the financial resources available because of the funding, and make appropriate allocation of these funds to undertake the necessary tasks. With the current writing, the operating organization has the burden to ensure "that	Accepted			To be in consistence with GSR Part 1

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			sufficient financial resources are available" that may not be the case if insufficient funding if the generator is another organization.				
23.	3.28	The operating organization should also demonstrate that the on-site emergency plan is compatible with the off-site emergency plans and response (local, regional, national). This provision can also be included in this paragraph. {1}	The compatibility between the on-site and off-site emergency plans is a very important point in terms of the effective implementation of these plans (effective response) and this point should be checked during preparation of these plans.	The operating organization should develop emergency plan, necessary procedures and analytical tools for on-site emergency preparedness and effective response as required in GSR Part 7. The operating organization should coordinate this emergency plan with those of all other bodies that have responsibilities in a nuclear or radiological emergency, including public authorities, and submit it to the regulatory body for approval. As required in GSR Part 7, account is taken in the content, features and extent of emergency plans of the results of the hazard assessment and any lessons from operating experience and from past emergencies, including conventional emergencies [20, 37]. The operating organization should demonstrate to the regulatory body, as part of the safety case, that the emergency arrangements provide for sufficient assurance for an effective on-site emergency response and are in place [38].			Multiple proposals need to be agreed. Further changes to be made during full-scale revision
24.	3.28/ First line	"The operating organization should ~~develop~~ prepare emergency plan and develop necessary procedures and analytical tools for effective on-site emergency preparedness and response. {6}	According to Requirement 23, sub clauses 6.19, 6.20 and 6.21 of GSR Part 7. Developing necessary procedures is very important.				
25.	3.28/5,7 (p.17)	The operating organization should demonstrate ~~and provide sufficient reassurance~~ to the regulatory body, as part of the safety case, that the emergency arrangements provide for sufficient assurance for an effective on-site emergency response [~~20, 37,~~ 38]. {7}	The phrases "provide sufficient reassurance" and "provide for sufficient assurance" deem duplication. Hence delete the former phrase. Ref. 20 (GSR Part 7) and Ref. 37 (GS-G-2.1) do not refer to "safety case" at all.				

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26.	3.28/Line 4	"Also the operating organization should establish and maintain arrangements for on-site preparedness and response for an emergency for facility or activity under its responsibility. The operating organization should demonstrate and provide sufficient reassurance to the regulatory body that, emergency arrangements are is place for an effective on-site emergency response." {6}	According to sub clauses 4.16 and 4.17 of GSR Part 7, first the operating organization should establish and maintain arrangements then shall demonstrate and provide the regulatory body with an assurance that arrangements are in place.				
27.	3.29	There should be clear and unequivocal ownership of the spent fuel stored in the facility. The responsibilities of the operating organization and the responsibilities of the spent fuel owner, if they differ, should be clearly defined, agreed upon and documented. The spent fuel owner and operating organization should take into account interdependences between all stages of spent fuel management, the options available and the overall national spent fuel management strategy. (the remaining of the text should be deleted) {15}	The original text of the paragraph may be problematic, as the distribution of responsibilities among the different actors dictated by the national policy may differ from what it is written. The condition of ownership does not necessarily carry the responsibilities described in the paragraph, as they may be attributed to the operating organization e.g.: national waste management organization. The current writing, in fact, imposes a restriction on the distribution of responsibilities to be agreed upon, that is claimed at the beginning of the paragraph.	Accepted			The original text of the paragraph isn't in line with the national practice in some countries and doesn't take into account transfer of the ownership. The text to be developed and clarified during full-scale revision. This revision by amendment should only avoid contradictions with actual IAEA Safety Requirements and be in line with up to date practice in developed nuclear countries. Deleted text is more related to the SNF

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			The remaining of the text should be eliminated as it is not necessarily the owner's responsibility to develop Plans for life extension				producer which is usually an owner at the initial stage.
28.	3.31/first line	"The operating organization ~~will be required to~~ should establish, maintain and implement a system…" {6}				Rejected	It isn't allowed to use "shell", but "should" downgrade the requirement of GSR Part 5
29.	3.32	"In addition, physical protection systems for deterrence and detection of the intrusion of unauthorized persons and for protection against sabotage from within and outside the facility ~~to~~ should be designed, installed during the construction and operation of the spent fuel storage facility." {9}	Wording		...are required to be designed, installed…		Proposed wording is downgrading the requirements.
30.	4.7	to add: State or Governmental responsibility should be established for nuclear "legacy" fuel management. {13}	It's necessary to clearly define responsibility for "legacy" fuel from early stage of nuclear power development.			Rejected	Para 4.7 states arrangements for funding of future spent, but not allocation of responsibilities. 4.8(a) covers financial issues of "legacy" SNF
31.	4.12	Records concerning the spent fuel and its storage that need to be retained for an extended period should be stored in a manner that minimizes the likelihood and consequences of loss, damage or deterioration due to unpredictable	Essential! We suggest to put in accordance with further statements in text where "human induced or natural events" is being used (See	Accepted			

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		events such as fire, flooding or other ~~natural or human initiated occurrences.~~ human induced or natural events.…{9}	Para 5.18).				
32. (@)	5.7	Modify Para 5.7 to read: The operating organization should apply passive safety features to the extent practicable. ~~The operating organization should demonstrate as soon as possible that, to the extent possible, passive safety features are applied.~~ In the assessment of long term safety, the degradation of passive barriers over time should be taken into account. [8]	Improve clarity		The operating organization should demonstrate in the safety case that, to the extent possible, passive safety features are applied		This Para and Chapter is specifically related to the safety case and safety assessment, but not to the safety measures at design or operation stage. Another wording is proposed. Passive safety provisions at design stages are addressed in 6.3 and Para * after 6.35.
33.	5.11	* The possibility of inadvertent human intrusion normally would not be considered relevant when assessing the safety of a storage facility because the facility will require continued surveillance and maintenance not only during, but also after the spent fuel emplacement phase. Prevention of intentional human intrusion requires adequate security arrangements (they are considered in the nuclear security series publications, e.g. Ref. [7]) and these should be addressed in the safety case (See Para. 3.31 – 3.33). {9}	Clarification: Reference to Para. 3.31 – 3.33 could make sense here	Accepted	(See Para. 3.32-3.33)		

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34.	5.14	Periodically, the safety case should be reviewed to assess the continuing adequacy of the storage capacity; account should be taken of the predicted spent fuel arising, the expected lifetime of the storage facility and the availability of reprocessing or disposal options (See Para. 5.27). {9}	Clarification: Reference to Para. 5.27 Requirement 16 (GSR Part 5) could make sense here	Accepted			
35.	5.21, p28	(q) ~~Physical protection arrangements for the facility.~~ {3}	Nuclear security measures are not to be described in the safety case but in the security plan		(q) Management of safety and security interface		5.21 states: "A facility specific safety case and supporting assessment should generally include aspects such as:…" This doesn't suppose attachment of security plan or detailed description of physical protection arrangement, but only potential impact of these arrangements on safety of facility.
36.	5.21	This paragraph would include contents relating to ageing management. {12}	Ageing management is one of the key points for safety.	Accepted			SA addresses ageing in form of scenarios, while ageing management to be included and covered by the management system (s)
37.	5.21 (r) (p 28)	The internal and external emergency plan {14}			…on-site emergency plan		SC to be developed by the OO which isn't resp. for ext EP

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38.	5.22 (p. 27)	Where facilities on the site share resources (whether human or material resources) in accident conditions, evaluation of such scenarios in the safety assessment should demonstrate that the required safety functions can be fulfilled at each facility considering the process to prioritize usage of resources when relevant. {14}	The need to adequately prioritize usage of resources has been lost (it was mentioned in the previous version): it is the only reason of 5.22.			Rejected	It is against the words before to demonstrate that the required safety functions can be fulfilled at each facility
39.	5.24 Line 4, 5	In normal operation, for spent fuel storage facilities, there should be ~~nothing~~ no mechanism that will cause a rapid increase in reactivity in the stored fuel, and ~~thus~~ relatively few credible scenarios under accident conditions for such a sudden excursion followed by a release of radioactive material. {2}	The original sentence appeared not sufficiently clear. The first part of the sentence that speaks about normal operation whereas the second part of the sentence is believed to refer to accident conditions.	Agreed	there should be no mechanism that will cause a rapid increase in reactivity in the stored spent fuel, and thus relatively few credible accidental scenarios for such..		
40.	6.1 (p 31)	Spent fuel storage facilities should provide for the safe, stable and secure storage of spent fuel before it is reprocessed or disposed of. The design features and the operation of the facility should be such as to provide confinement of radioactive material to ensure that radiation protection of workers, members of the public and the environment is optimized within the dose constraints in accordance with the requirements established in Ref. [9] to maintain subcriticality, to ensure removal of decay heat and to ensure			…These safety functions should be maintained during all normal operations, anticipated operational occurrences and accident conditions.		To be in line and use the same wordings as in the following Paras.

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		retrievability of the spent fuel. These safety functions should be maintained during all operational states, including the incident and accident conditions. {14}					
41.	6.2 (c) and 6.37.	Clarification for proper usages of natural convection system and active heat removal system. Which system to be recommended in wet storage and dry storage clearly? For instance, here are main changed from SSG-15 regarding to the systems; In para. 6.2.(c) as dry storage, the following para. has been deleted; *However, if natural convection is to be used, the need for active components, e.g. pumps and ventilators, should be minimized through higher operational reliability of the system and corresponding cost reduction.* In addition, in para. 6.37. also has been deleted; *Active heat removal systems performing a safety function should be designed to withstand conditions in all operational states and accident conditions and should satisfy the deterministic single failure criterion.* If the active heat removal system is				Rejected	Para. 6.2 is just listing the main types of storage systems. Noted "deleted" text is now part of the Para. before 6.36, the first after Heat removal header. This Para to be numbered after all corrections discussed to avoid improper references.

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		unavailable, it is assumed that the water temperature in the spent fuel storage pool increases due to the loss of the cooling function or injection function, and then the water level of the pool will decrease due to the evaporation. Para. 6.37 is necessary as before. {4}					
42.	6.2(b)	Remove the period after "vertically" to have the sentence reads: "They are usually cylindrical in shape, circular in cross-section, with the long axis arranged either vertically or horizontally." {8}	The errant period (.) after The period after "vertically" should be removed to ensure the accuracy and readability of the sentence.	Accepted			
43. (@)	6.2	spent fuel storage facilities are… {8}	Proper tense		To be addressed during editing		To be cleared by editors. TYPES are plural, not "facility" – "types of facility"
44.	6.4 j)	Propose inserting: "The storage facility should be designed and operated such that foreign material entry into the fuel storage area is precluded. This may take for form of admin controls, or where practicable, physical systems to prevent foreign material generation (or unintended release), and barriers to enable there capture or to prevent their migration into the fuel storage area." {10}	Foreign Material exclusion in general is important to fuel and equipment integrity and is not addressed.			Rejected	*Foreign=Extraneous?* *Foreign=Irrelevant?* Para. 6.4 is focused on general safety considerations of design, while proposed text is much closer to the organizational measures.

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45. (@)	6.9	A design lifetime should be defined and justified, taking into account national policies and current technology. Provisions for lifetime extension at the design phase may be needed. For storage beyond the original design lifetime of the facility, testing, examination and/or an evaluation may be necessary to assess the integrity of the spent fuel or the storage cask. Careful consideration should be given to the approach to be adopted to prevent unnecessary occupational exposure and to prevent accidental release of radioactive material. ~~Potential problems with the integrity of the spent fuel or of storage casks should be considered in advance of the need for physical actions, such as placing the spent fuel into new casks. In some cases, rather than placing the fuel into a new cask, it may be necessary to move the storage casks to another storage facility for which the building provides, or structures within the building provide, the necessary confinement and isolation.~~ If an extension to the storage period in dry storage casks is under consideration, assessment of the integrity of the casks and the spent fuel, including survey of the casks for leaktightness, may be sufficient to demonstrate that the storage period may be extended. In	The paragraph, as it reads, seems to be inevitably accepting storage beyond design lifetime. Since we are dealing with the design phase a perhaps more coherent requirement would be to define the design lifetime and provisions for lifetime extension In order to ensure the viability of necessary arrangements, the consideration to potential problems with the integrity of spent fuel or casks and prevention of unnecessary occupational exposure and the prevent accidental release of radioactive material should be assessed during the design phase of the facility. It is proposed to move that requisite into a new paragraph (see next)		Proposal: Design of dry storage facility should provide for arrangements to handle potential problems with the integrity of the spent fuel and of the storage system at the end of original design lifetime of the storage facility in advance of the need for inspection of the content of the casks, assessment of integrity of the spent fuel, storage cask. Such inspection might be necessary to assess the integrity of the casks and the spent fuel, including survey of the casks for leaktightness, to demonstrate that the storage period may be extended, if an extension to the storage period in dry storage casks is under consideration. Careful consideration should be given to the approach to be adopted to prevent unnecessary occupational exposure and to		The Para. 6.9 might need more detailed consideration and discussion at full scale revision, because current wording is more about extension procedure than about design process itself. There aren't contradictions with Safety requirements. If better wording and consensus can easily be found then the Para. 6.9 to be changed. Otherwise leave it as it is for the full-scale revision.

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		such cases, an immediate inspection of the content of the casks may not be necessary. In considering an extension of the storage period beyond the design lifetime, all factors should be taken into consideration. If it is concluded that the storage period cannot be extended without undertaking an inspection of the fuel, all the necessary precautions should be taken in planning and undertaking the work. {15}			prevent accidental release of radioactive material. In considering an immediate inspection and extension of the storage period beyond the design lifetime, all factors should be taken into consideration, in particular the radiation dose and potential accidents that could occur on opening the cask and removing the contents or inspecting them in situ.		
46. (@)	New paragraph after 6.10 or before 6.11	Design should provide for arrangements to handle potential problems with the integrity of the spent fuel or of storage system in advance of the need for physical actions. Careful consideration should be given to the approach to be adopted to prevent unnecessary occupational exposure and to prevent accidental release of radioactive material. {15}	See above We consider that the possible alternatives to the management of fuel or cask integrity are highly dependent on the storage system. Transfer the fuel to another cask or moving the cask to another location are options to consider together with other potential alternatives.				See above
47.	6.12/3 (p.35)	[3. ~~30~~] {7}	Ref. 30 does not seem to be an appropriate reference. It does not provide any additional information. Paras. 6.12 and 6.13 of the draft mentions about	Accepted			

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			defense in depth in all safety activities, while para. 6.95 of Ref. 30 (SSG-41) only says "(h) Analysis of the measures relied upon to provide defence in depth." for operating procedure to maintaining subcriticality.				
48.	6.23 line 1	Currently says "The construction materials should allow for easy decontamination of surfaces. Compatibility of decontamination materials with the operating environment should be considered for all operational states and accident conditions…." Suggest rewording to "The construction materials **and their geometries** should allow for easy decontamination of surfaces…. {10}	It is also useful to avoid traps for contamination which are difficult to clean.			Rejected	Is it about geometry of construction *materials* or geometries of construction *surfaces*? More detailed discussion and better wording is needed for the full-scale revision.
49.	6.28 Line 2; & 6.31 Line 5; & 6.32 Line 2	6.28. A safety requirement on all designs for spent fuel storage facilities is to maintain subcriticality of the entire system under all credible **abnormal conditions** ~~circumstances~~ [3] 6.31. Subcriticality can be influenced by internal and external hazards that have the potential to reconfigure the pre-existing spent fuel assembly array in	The reason for proposed text is to address (a) inconsistent terminology in different parts of the DS489 and (b) inconsistency with the terminology established in IAEA, ISO and national standards. Namely, the following different terms are used in DS489 to denote the same conditions: credible circumstances (in	Accepted			

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		such a way as to increase the potential for criticality. Consideration should also be given to routine fuel movements that could bring the fuel being moved into close proximity with stored fuel or in which fuel could be dropped and fall onto stored fuel. For operational states and **credible abnormal** ~~accident~~ conditions, the sequences of events leading to such abnormal fuel configurations should be evaluated. 6.32. An adequate margin of subcriticality in the effective neutron multiplication factor k_{eff} that is acceptable to the regulatory body should be maintained for operational states and credible abnormal ~~accident~~ conditions[9]. {11}	para 6.28), credible accident conditions (in para 6.29), accident conditions (in para 6.31), credible accident conditions (in para 6.32), and abnormal conditions (in Footnote 9). As established in IAEA Standard SSR-4 (requirements 38, 66), ISO Standard 1709 (para 4.4.2), American Standard ANSI/ANS-8.1 (para 2), Canadian Standard CSA N292.1 (para 3), etc., the proper term to be used in DS489 is "credible abnormal conditions". Furthermore, any use of word "accident" in this context is not appropriate because (a) these are conditions where criticality accident did not happen (by the requirement, accident shall be prevented) and (b) it creates confusion between accidents and non-accidents.				
50.	6.30	Where spent fuel cannot be maintained subcritical by means of safe geometrical configurations alone, additional means such as fixed neutron	Essential! More strict formulation is more suitable here	Accepted			

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		absorbers and/or the use of a burnup credit (see Appendix II, paras II.7 – II.10) ~~could~~ should be applied. {9}					
51.	6.30/line 5	"Consideration should also be given to the effects of ageing, corrosion and handling on the fixed neutron absorbers " may be changed as "Consideration should also be given to the effects of ageing, burn-up, corrosion and handling on the fixed neutron absorbers" {12}	Burn-up of absorbers is also a important effect.	Accepted			
52.	6.31	…. ~~If warranted,~~ Appropriate mitigating measures should be put in place to ensure that subcriticality will be maintained under all such conditions. {9}	Clarification	Accepted			
53.	6.32, line 2-3	Modify Sentence to read: “An adequate margin of subcriticality in the effective neutron multiplication K_{eff} that is acceptable to the regulatory body should be maintained for operational states and abnormal conditions to avoid criticality accident. {8}	More proper to use of the term “abnormal conditions” to avoid credible accident.	Accepted			
54.	6.33(b)	6.33(b) "Where uncertainties exist in any data relating to the fuel (in terms of design, geometries, nuclear data, etc)"may be changed as "Where uncertainties exist in any data relating to the fuel (in terms of design, manufacture, nuclear data, etc.)" {12}	Manufacture ucertainties includes geometries, material, density uncertainties.			Rejected	To be considered and discussed in full-scale revision

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
55. (@)	6.33(e)	Modify Para 6.33(e) to read: For certain accident conditions such as ~~boron dilution~~ a fuel handling accident, limited credit for soluble boron may be allowed in view of the double contingency principle. {8}	Boron dilution is not independent of the soluble boron, so double contingency does not justify crediting soluble boron to mitigate a dilution event. A fuel handling accident is an example of an infrequent event independent of soluble boron, so the double contingency principle permits crediting soluble boron to offset the reactivity increase that could result from a misplaced or dropped fuel assembly.	Accepted			Might be additionally considered and discussed in full-scale revision
56.	6.33 (e)	For certain accident conditions such as boron dilution, limited credit for soluble boron may be allowed ~~in view of the double contingency principle FN10.~~ ~~FN10: By virtue of this principle, two unlikely independent and concurrent incidents are beyond the scope of the required analysis.~~ {14}	The recommendation is relevant but its reason is not fully related to the double contingency principle: according to this principle, an accident is "not possible unless…", whilst 6.33 (e) is related to the control of an accident. Moreover, the FN is not consistent with the IAEA glossary	Accepted			Boron issues could be additionally considered and discussed in full-scale revision, if needed
57. (!)	After 6.35. **Heat removal** /12	**Heat removal** * The heat removal capability should be such that the temperature of all spent fuel does not exceed the maximum allowable temperature and	To clarify the design extension conditions taking some examples coming from DS487 as the revision of NS-G-1.4.	Accepted	***After numbering this paragraph, it became 6.36 and numbers of the following till 8.80***		

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
		that the temperature of other safety related components in the facility should also not exceed their maximum allowable temperatures in normal operation, anticipated operational occurrences and accident conditions, including the design basis accidents and, as far as practicable, design extension conditions[12]~~.~~, such as; (a) Multiple failures leading to the sustained loss of the forced cooling system; (b) Combinations of failures selected on the basis of probabilistic risk assessments (e.g. Combination of anticipated operational occurrences or postulated accidents with a common cause failure affecting the system designed for mitigating the event of concern). {4, 7}	As it is not appropriate for all of design extension conditions (e.g. failure of cooling system) to have the maximum allowable temperatures, add the phrase "as far as practicable."		***are increased. When going through this table one needs to address both comments and resolutions to the next Paragraph in the text.***		
58. (!)	After 6.35. /l6	Heat removal systems should be designed for all facility states defined in SSR-4 DEFINITIONS. ~~normal operation conditions, anticipated operational occurrences and accident conditions, including the design basis accidents and design extension conditions and~~ The systems should satisfy the deterministic single failure criterion for operational states and design basis accidents. To improve accident management capabilities, the design should include features to	1) Duplications. The same comments on para. 6.39, 6.40, 6.50, 6.68 and so on. 2) Generally, "Single failure criterion" should not be applied for DEC, but only for NO, AOO and DBA. The term "package" is	Accepted			SG2016: Package - The complete product of the packing operation, consisting of the packaging and its contents prepared for transport. Packaging – One or more receptacles and any other components or materials necessary for the receptacles to

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
		enable the use of non-permanent equipment and consider passive measures, such as dispersing high decay heat fuel assembly ~~packages~~ uniformly among low decay heat assembly ~~packages~~, should be considered. {4,7}	defined for transport in the IAEA Safety Glossary. To prevent misunderstanding, delete "packages."			Rejected	perform the containment and other safety functions. "*Prepared*" doesn't mean "*intended only for*" transport
59. (!)	After 6.35 Page 40/41	Missing numbering and justification. {9}	Editorial	Accepted			
60. (!)	Page 41/ Before Para 6.36	In the Heat Removal section (just above section 6.36) the last sentence should end with a period (.).{8}	Editorial	Accepted			
61. (!)	6.40	…. As necessary, and as far as possible, the effectiveness of the spent fuel storage containment system should be monitored to determine whether corrective action is ~~necessary~~ required to maintain safe storage conditions. {9}	Essential! More strict formulation is more suitable here			Rejected	Prefer to keep it "as is" to leave the OB possibility to perform corrective action even when it isn't required.
62. (!)	6.45	(q) The floor area on which any transport vehicle with a heavy spent fuel cask may move or be parked should be designed with adequate floor loading margins. Such areas should be clearly marked to avoid overloading ~~a floor area designed to accept a lower floor loading.~~ {9}	Clarification			Rejected	Doesn't bring clarification and better understanding
63. (!)	6.46 d)	excessive requirement {13}	Some fuel assembly could not be dismantled without "hot cells" and cutting machines.			Rejected	But some could… It isn't a must here.

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Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
64. (!)	6.46 f)	to add: canisters/casks {13}	In some dry storage systems sealed canisters provide major hermetic barrier.	Accepted			
65. (!)	6.47. h)	Currently says: "Equipment should be provided with suitable interlocks or physical limitations to prevent … the lifting of spent fuel assemblies or other components over spent fuel, the accidental release of loads or the application of incorrect forces. " Propose changing to: "Equipment should be provided with suitable interlocks or physical limitations to prevent … the lifting of spent fuel assemblies or other components **to heights greater than required**, or over spent fuel. The accidental release of loads or the application of incorrect forces should be prevented. " {10}	Partly clarity and also to introduce the good practice of minimizing lift heights.		…lifting of spent fuel assemblies or other components over spent fuel and to heights greater than required, the accidental release of loads or the application of incorrect forces.		
66. (!)	6.54(a)	Modify Para 6.54(a) to read: (a) Partial defects in the spent fuel cladding, leading to leaks and resulting in contamination of the pool by fission products; {8}	Add clarity to the statement.	Accepted			
67. (!)	6.55/Line 4	"…accidents and design ~~extention~~ extension conditions." {6}	editorial	Accepted			

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
68. (!)	6.58	Adequate and diverse means of communication should be provided by design to meet the requirements for operation of the spent fuel storage facility and for emergency preparedness and response. {9}	Essential! To be consistent with Req. 37 Para 5.67 of SSR 2/1	Accepted			
69. (!)	6.59.	**Instrumentation and control** * Instrumentation should be provided to detect conditions that may result in loss of residual heat removal capability and excessive radiation levels. This instrumentation should provide appropriate alarms and indications at a protected location that would result in timely initiation of corrective actions by ~~local~~ operators and automatic initiation of protective actions, when needed. {4}	The corrective actions would be implemented in not only local but also main control rooms, etc,. Therefore, the "local" should be deleted.	Agreed	Proposed version: ..by local operators and in main control rooms,…		Better wording to indicate both local operators and main control rooms is required. Could be improved and clarified in full-scale revision.
70. (!)	6.65	Provision should be made for adequate and reliable lighting in support of operation and to facilitate inspection ~~and/or physical protection~~ of spent fuel storage areas. {3}	Lighting is important in the context of nuclear security. However, the mentioning of it in this paragraph does not seem relevant. It gives a wrong idea of what lighting should be for physical protection purposes.	Accepted	Provision should be made for adequate and reliable lighting in support of normal operation, anticipated operational occurrences and accident conditions and to facilitate inspection of spent fuel storage		"Physical protection" is deleted to avoid misunderstanding and keep physical protection issues apart from the safety.

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Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
					areas		
71. (!)	6.66	excessive requirement {13}	In many cases lighting is provided by removable equipment			Rejected	There is no indication should lighting be stationary or removable
72. (!)	6.71	The following arrangements can be added to the list: - Procedures and other arrangement to perform effective and uninterrupted communication in the event of an emergency - Procedures and other arrangement to ensure the safety of staff in the event of an emergency - Procedures and other arrangement for emergency classification and use of operational criteria in the event of an emergency {1}	These arrangements are also very important in terms of effective emergency preparedness and response for the spent fuel storage facilities.	Accepted			6.71 states, that "on-site emergency arrangements should include, but are not limited to:…" and so doesn't exclude proposed items, that could be listed in specific safety guides addressed emergency preparedness or added in the full scale revision as specific for SNF SF.
73. (@) (!)	6.71(d)	Modify Para 6.71(d) to read: (d) Procedures and other arrangements to implement mitigatory actions should include operating procedures, as well as emergency procedures for anticipated abnormal and potential accident conditions. {8}	Completeness to consider operating procedure under emergency and abnormal conditions.		Procedures and other arrangements to implement mitigatory actions including operating procedures in abnormal conditions and in event of emergency,		For consistency with 6.98

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
74. (!)	6.71	While the responsibility for on-site emergency preparedness and response remains with the operating organization (see para 3.28), the responsibility for off-site emergency arrangements including emergency plans, procedures, provision of emergency services etc. will be with relevant off-site response organizations [20, 36]. As such, the hazard assessment should be provided to off-site authorities to inform their emergency planning, either by the operating organization or the regulatory body. On-site emergency arrangements should include, but are not limited {5}	Clarity. The document should clearly state that the hazard assessment needs to be available to off-site emergency response authorities, so that appropriate off-site plans can be developed.	Accepted			Note: 6.71 is related to emergency preparedness – not to hazard assessment that is considered in the safety standards addressing emergency preparedness and response. If specific for SNF SF, it could be considered in the full-scale revision.
75. (!)	6.71	Propose adding: (g) Designing and building of emergency facilities based on the hazard assessment results including radiological and non-radiological hazard and nuclear security threat. {12}	The item is important for emergency preparedness.	Accepted			Not necessary, because ”are not limited to:...” Might be considered in full-scale revision
76. (!)	6.75 Last Line	The operating procedures should cover ~~both~~ operational states, anticipated occurrences and accident conditions. {2}	Reflecting similar statements elsewhere in the DPP.	Accepted			
77. (!)	6.75	Commissioning involves a logical progression of tasks intended to demonstrate the correct functioning of features specifically incorporated into the design to provide for safe storage of spent fuel. In addition, in commissioning, operating procedures are verified and the readiness of staff to	Clarification: Accident conditions are usually covered by emergency operating procedures			Rejected	See above. Emergency issues are covered in another place.

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Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
		operate the spent fuel storage facility is demonstrated. The operating and emergency operation procedures should cover both operational states and accident conditions. {9}					
78.	6.93 Addition to point list	Add new point (e) Human factors potentially involved during handling operations {2}	It appears that potential human factors caused by procedure users is not included into development of the procedures. Possibly, HF could be included elsewhere in the section instead.		Proposed to address HF in 6.88:		
79.	6.95 (p 55)	Additionally, the operating organization should ensure that procedures exist (such as procedures exist for the receipt, handling and storage of spent fuel with failed cladding or that such fuel is not accepted at the spent fuel storage facility) and that these procedures identify the safety measures used to manage these situations. These procedures should be considered as safety procedures. In cases where such fuel is accepted, in addition to confinement considerations there may be implications for criticality, which should be fully assessed. Where appropriate, the receipt, handling and storage of such fuel should be made subject to specific procedures. {14}	As these procedure deal with operations important for safety, they should be considered as safety procedures, thus their implementation controlled.		…procedures exist for the receipt, handling and storage of spent fuel with failed cladding and that these procedures identify the safety measures to be used for managing these situations, or that such fuel is not accepted		

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
80.	6.97 Line 1, 2	There are various safety related events that should be taken into account in the development of normal and emergency operating procedures. {2}	It is not clear, if PIEs are meant here or operational experience events.		See above		PIE. We hope it is more clear after changes made (see below)
81.	6.97	~~(h) Failure of the physical protection system.~~ {3}	Failure of PP system is not a safety event		Failure of access control system leading to inadvertent access which may compromise safety		Only intrusion events that potentially can compromise safety are to be addressed here
82.	6.97.	* There are various safety related events that should be taken into account in the development of normal and emergency operating procedures. It should be noted that many of these events would be addressed either as anticipated operational occurrences or as design basis accidents. However, some of these events or a combination of events could also lead to severe accidents, which are beyond the design basis. Whilst the probability of such beyond design basis accidents occurring is extremely low, operating procedures and emergency plans should be prepared by the operating organization. Events to be considered in doing so include the following:…{4}	1) Clarification for "safety related events". This wording is only used here. 2) Clarification for "severe accidents" and "beyond the design basis". These wordings are used here and should be replaced used in SSR-4.		See below		Safety related events are events that potentially can compromise safety. It isn't a term, but isn't it clear? "Severe Accident" is used e.g. in the title of NS-G-2.15 SSR-4 (6.73) uses "accidents beyond the design basis" See comment proposal below
83.	6.97/Line 4 and 5	"…events or a combination of events could also lead to severe accidents~~, which are beyond the design basis.~~	**GSR Part 5** includes **no new term or term with revised definition differ**	Agreed	…However, some of these events or a combination of		Proposed wording doesn't use: "beyond the design basis"

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
		Whilst the probability of such ~~beyond design basis accidents~~ design extension conditions occurring is…" {6}	**from those in the IAEA Safety Glossary (2007 Edition).** But there are some new terms or terms with revised definitions differ from those in the IAEA Safety Glossary (2007 Edition) in SSR-2.1 and SSR-4 that are used in this draft as an example: **Design extension condition.** In this draft both terms, beyond design basis accidents (6.97/Line 5) and design extention conditions (in sub clauses: 6.39, 6.59, 6.68,..) according to SSR-2/1 and SSR-4 have been used.		events could also lead to severe accidents, which might be considered within design extension conditions or go beyond those conditions considered in design extension conditions…		
84.	6.97	(f) Other natural events such as earthquake or ~~tornado~~ extreme meteorological events; {9}	Clarification: We suggest to formulate it more general	Accepted			
85.	6.97	Currently says: "Consideration should also be given to the possible misuse of chemicals (e.g. unintended introduction into the pool water of acidic or alkaline fluids used for the regeneration of ion exchange resin)." Suggest that this is change to:	Clarity is insufficient and the new text broadens the scope to fully address the issue.	Accepted			

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
		"Consideration should also be given to the possible misuse of chemicals (e.g. unintended introduction into the pool water**) which may adversely affect the condition of the fuel and pool structures, or the functioning of ion exchange resins.**" {10}					
86.	6.98	The "emergency plan" term can be written as "on-site emergency plan" in this paragraph. {1}	The use of the term "emergency plan" can cause some confusion with the "off-site emergency plans. Operating organization is responsible for preparing "on-site emergency plan".	Accepted			
87.	6.114 Table 2	Video system ~~cameras~~: Confirmation of functionality ~~of cameras~~ Security: Confirmation of functionality of perimeter fences and/or gates and physical protection systems {9}	Essential! Cameras and fences/gates are only part (periphery) of the systems of the physical protection	Accepted			
88.	6.118	The operating organization of a spent fuel facility should be given detailed information concerning the characteristics of the spent fuel and associated non fuel hardware received for storage… (e) Spent nuclear fuel characterization and classification (i.e. details of conditions that could affect fuel handling or storage typically derived from direct inspection).	There are three comments for consideration: - Inclusion of non fuel hardware like inserts are relevant in order to have a clear description of elements to be stored together with the spent fuel. - Letter (e) refers to what is commonly			Rejected in this revision	To be considered and discussed in full-scale revision

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
		… (h) eliminated {15}	known as characterisation and classification. - Surface contamination and fuel dose rate are quantities derived from fuel history (chemistry, burnup, rod pattern,..) and as such are not part of any acceptance criteria for storage.				
89.	6.124. (f)	Overheating or loss of cooling in the reactor core during operation ~~transients/accident conditions~~ resulting in damage to fuel integrity {4}	Should be used defined terminologies.		Loss of cooling or overheating in the reactor core resulting in damage to fuel integrity.		
90.	6.126 (p 64)	Spent fuel assemblies that have become damaged as a result of mechanical events should be kept separate from intact fuel and appropriate monitoring should be provided to detect any failure of the outer confinement. Consideration should be given to technical contingency arrangements with a high degree of reliability on how to deal with spent fuel that is not retrievable by normal means or that cannot be transported easily. {14}		Accepted			

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Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
91.	6.136 (b)	Currently says: "The containment system: metal seals and restraining systems such as lid bolts. " Suggest removing "**metal**" {10}	Not all seals are metal.	Accepted			
92.	6.137	If storage of spent fuel is envisaged beyond the original design lifetime of the facility, the nuclear reactivity of the fuel should be reassessed and taken into account in the decision making, as necessary. In this case, an appropriately wide safety margin or additional safety provisions ~~may~~ should be applied. {9}	Essential! More strict formulation is more suitable here	Accepted			
93.	6.141	To add: Special attention to lining degradation for wet storages should be paid. {13}		Accepted			
94.	Appendix I, I.35	Dry spent fuel storage facilities should be designed either to exclude ~~of~~ the possibility of ingress of water, or other moderating medium, in such a way that consequences likely to result from the redistribution or the introduction of a moderator as a consequence of an internal or external event can be accommodated. {8}	Add clarity to the statement.	Accepted			
95.	Reference [15]	INTERNATIONAL ATOMIC ENERGY AGENCY, Regulations for the Safe Transport of Radioactive Material, 2018 Edition, IAEA Safety Standards Series No. SSR-6 (Rev. 1), IAEA, Vienna (2018). {8}	Update of Reference, IAEA recently revised SSR-6.	Accepted			

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
96.	I.11 (p 71)	Where water pools are to be connected by sluice ways, the design of the sluice pathways should afford confinement of water and detection, collection and removal of leakages. Sluice gates should be designed to withstand anticipated water pressures, including those resulting from accident conditions and the effects of internal and external hazards ~~earthquakes~~. {14}		Accepted			
97.	I.21	Modify Para I.21 to read: Fuel should be handled by equipment that minimizes the potential for a ~~drop~~ fuel handling accident. Over-raising of spent fuel or other components should be prevented by design features. ~~and/or~~ Fuel damage should be prevented by incorporation of dedicated interlocks to inhibit hoist motion in the event that ~~high radiation fields are~~ hoist overload is detected and to inhibit lateral motion during hoist operation. ~~This~~ Design features to prevent dropped fuel should include use of single-failure-proof ~~cranes~~ handling systems and positive locking mechanisms on the grapples ~~and~~ or hooks ~~of~~ used for the fuel assembly. ~~Operator failures should be avoided by applying the 'four eyes principle' or by use of check lists.~~ {8}	Item addresses more than just dropped fuel. Interlocks to inhibit hoist motion after detection of high radiation could prevent lowering to restore shielding and is too reliant on active systems when passive measures such as fixed length masts are more effective. Motion interlocks should be included to prevent fuel damage. Design measures to prevent drops should encompass the entire handling system including grapples or hooks. Checklists and oversight should be addressed in the OPERATION section.	Accepted			

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
98.	I.22 (p 73)	There are several pool management features that contribute to the safe operation of wet storage facilities. These include operations that maintain design parameters and minimize corrosion of pool structures, systems and components, and promote radiation protection, such as those shown in Table II– 1 of Annex II. The integrity of the spent fuel and the geometry necessary to maintain subcriticality and for heat removal and its related confinement barriers should be maintained throughout the lifetime of the facility and should be verified using appropriate methods with a high degree reliability. {14}		Accepted			
99. (@)	I.29(a)	Modify Para I.29 to read: Dilution of boron in a moderated pool environment and the potential for a reduction in margin to criticality ~~accident~~ where soluble boron is used for criticality control; {8}	Reference to a criticality accident implies that soluble boron alone is preventing criticality, which is not consistent with design principles.	Accepted			
100.	I.32. Line 1; & II.3. Line 1; & **ANNEX VII** (3) Line 1	I.32. (c) A criticality accident ~~event~~ if several spent fuel assemblies are displaced from the rack, and if there is deformation of the spent fuel array or unacceptably close proximity of spent fuel assemblies or arrays in adjacent racks;	Inconsistent and conflicting terminology in different parts of the DS489 creates confusion between criticality accidents and non-accidents. Namely, a criticality accident is called "criticality event" (para I.32 (c) and Annex VII (3)), and		To be left for editorial check		To be left for editorial check

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
		II.3. Protection against criticality accidents constitutes an important design requirement. **ANNEX VII** (3) A criticality accident ~~event~~ due to the inappropriate accumulation of fissile material, change of geometrical configuration, introduction of moderating material, removal of neutron absorbing material or various combinations of these. {11}	"criticality" (para II.3), whereas conditions where a criticality accident did not happen are called "accident conditions" (para 6.29, 6.31, 6.32).				
101.	Appendix I I.47	Consider deletion of "Sufficient clearances should be provided from all directions and on all sides to provide the necessary access." {14}	"Sufficient clearances should be provided from all directions and on all sides to provide the necessary access." has been added → it is whether not usefull considering the first sentence, whether not compatible with security considerations? This proposal is identified as "accepted" in the MS consult resolution table, but the modification has not been implemented in the current version	Accepted			
102.	ANNEX II TABLE II-1, a TABLE II-2	**Applicable safety functions** Replace "containment" with "confinement", {4}	The same comment as #1. Functionality is written here.	Accepted			

COMMENTS BY THE STANDARD COMMITTEES REVIEWERS				PROPOSED RESOLUTION			
Comment No.	Para(!)/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
103.	ANNEX II TABLE II-1 #4.	**Applicable safety functions** Radiation protection, heat ~~protection~~ removal {4}	Correction.	Accepted			
104.	Paragraph between 6.36 (p.40)	*Proposal of IAEA (No.199 of the comment resolution)]* *Consider adding a new paragraph:* *In case of an external fire aggressing a storage cask, some safety related components may be destroyed and the safety functions shall be ensured by redundant design of the cask.* [Our amendment] In case of an external fire aggressing a storage cask, some safety related components may be destroyed and the safety functions ~~shall~~ should be ensured by redundant design of the cask or accident management such as the use of non-permanent equipment to supply cooling system. {7}	As DS489 is a Safety Guide, "shall" statement is not applicable. For postulated accident, additional text regarding measures to accident should be added here to include cases which cannot be responded by design, e.g. vehicles that provide electric or water supply to cool down casks suffering from a fire.		See full text of improved 6.36		*This comment addresses the text from resolution proposed on step 9, but modified during step 10, and not existing in the DS489 version sent for review on step 11*. Paras.6.5-6.75, including 6.36, are about Design of Spent Fuel Storage Facilities and "the use of non-permanent equipment" is included in this light. "Shell" statement isn't used

The comments in the table above are made by:
{1} - Dr. Sertan YEŞİL. Turkey / Turkish Atomic Energy Authority (EPReSC)
{2} - Mr. Vaz Mottl. Australia/Australian Radiation Protection and Nuclear Safety Agency (NUSSC)
{3} - DANDRIEUX. FRANCE – Departement de la sécurité nucléaire – Ministry for an ecological and solidary transition (NSGC)
{4} - Japan NUSSC member. Japan NRA
{5} - B. Ahier. Canada / Health Canada (EPReSC)
{6} - Jila Karimi Diba. IRAN/National Radiation Protection Department (NRPD) - Iran Nuclear Regulatory Authority (INRA) (EPReSC)
{7} - Japan/Nuclear Regulation Authority (WASSC)

{8} - Multiple, POC Boby Eid (Boby.abu-eid@nrc.gov). USA/U.S. NRC
{9} - Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) (with comments of BfE and GRS). Germany
{10} - Simon Bowditch. UK ONR
{11} - Dr. Vladimir Khotylev. CANADA/Canadian Nuclear Safety Commission
{12} - PENG HAICHENG, HUANG DONGXING, LIN XIUJING, ZHANG JIANGANG. China /China Atomic Energy Authority (EPReSC)
{13} - E. Shevtsova. Russian Federation/FSUE "RosRAO" (WASSC)
{14} - ASN/IRSN. France
{15} S. Solís/F.Pelayo. Spain / Consejo de Seguridad Nuclear

(@) – These paragraphs were additionally discussed in the working group during the 45th WASSC Meeting

(!) – Numbering of the paragraphs in the draft DS489 between 6.35 and 6.80 in Chapter 6 is now shifted: 6.36 is now 6.37, 6.80 is now 6.81