

**DS 450 – Draft Safety Requirements "Safe Decommissioning of Facilities" rev. April 2012**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Christian KENNES		Page 1 of 1					
Country/Organization: Belgium / Bel V		Date: 7/05/2012					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	5 (Req. 8)  5.1	"The operator shall <b><u>propose</u></b> a decommissioning strategy,..." instead of <b><u>select</u></b>  "The <b><u>proposed</u></b> decommissioning strategy is justified..." instead of <b><u>selection of</u></b>	This is more in line with the current practice: the operator proposes and the authority approves.			<b>X</b>	The operator is responsible for selecting the decommissioning strategy. Based on this selection, the operator then prepares the final decommissioning plan which is submitted to the regulatory body for review and approval.
2	8.8	"Prior to starting decommissioning, the operator ensures that the availability of, to extent possible, adequate waste processing, <b><u>and</u></b> storage <del>and disposal</del> capacity for the waste resulting from the decommissioning	Availability (of the disposal) and capacity of the disposal facility are not the responsibility of the operator but are ultimately the result of a political decision on the management of the waste at the national level. And moreover the non-existence of a disposal facility should not jeopardize the decommissioning process. We therefore propose to delete the term "disposal".	<b>X</b>	See response to USA comment #36.		

**Draft Safety Requirements**  
**DS450 Safe Decommissioning of Facilities (20 April 2012)**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: ENISS		Page 1 of 7					
Country/Organization: ENISS		Date: 25 May					
2012							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1		DS 450 has improved significantly since the last revision in terms of clarity of requirements and structure of the document. However, in some areas of this draft further improvements are considered necessary so as to ensure that DS450 becomes a consistent document for decommissioning.		X			
2	All	The document speaks of the “operator”, not of the “licensee” – sometimes the licensee is different from the operator. As the Requirement is for facilities and not activities, the term “licensee” would be more appropriate and should be used in the whole document.				X	This document applies to small facilities and the term, licensee, may not be appropriate.
3	All	The “GUIDELINES FOR DRAFTING IAEA SAFETY STANDARDS Manual for the application of SPESS Version 1 – 18 November 2010” (SPESS C) suggest “...A Safety Requirements publication should consist as far as possible of ‘shall’ statements, accompanied by the minimum amount of explanation and/or comment necessary, to enable them to be incorporated into national laws and regulations...” All explanations to the requirements should therefore use the same “shall” form as the requirement itself. It is not understood, why the indicative mode is used for the explanations. This is not consistent to already issued requirements like SSR 2.1 and should be changed for clarity.		X			
4	1.8	... <i>Immediate dismantling</i> is the strategy in which the equipment, structures and components of a facility containing radioactive material are removed and/or decontaminated to a level that permits the facility to be released for unrestricted use, or with restrictions on future use. In this case, decommissioning actions begin shortly after the permanent cessation of operations. <del>This strategy implies prompt completion of decommissioning actions and</del> involves the removal of radioactive material from the facility and its processing	Prompt completion is misleading as the time required for decommissioning can be many years depending on the size and complexity of the facility being decommissioned. All this strategy implies is a prompt start to decommissioning.	X	See response to USA comment #10.		

		for either storage or disposal.					
5	Req. 1	Decommissioning shall be <u>already</u> considered <del>part of the original activity</del> <u>in the planning and design stage of the facility</u> and the requirements of the Basic Safety Standards (BSS) [5] shall be enforced during decommissioning.	The requirement is not clear – what means part of the original activity?  Text change for clarification	X	See response to USA comment #22.		
6	2.3	A safety culture is fostered and maintained in both the decommissioning organization and the regulatory body in order to encourage a questioning and learning attitude towards safety and to discourage complacency [5].	The establishment of a safety culture should be placed as one bullet point in Req. 5 and 6, describing the responsibilities of the reg. body and the licensee. It is misplaced as being part of the rad. Prot. Requirement.	X	See response to Spain comment #5.		
7	3.3	3.3. The responsibilities of the regulatory body include: – ... – inspecting and reviewing decommissioning actions and taking enforcement actions in case of non-compliance with the authorization or licence conditions and safety requirements <u>derived from the national legal framework</u> ; – ...	It is not clear, what safety requirements are meant (this IAEA requirements are normally not legally binding) – modification proposed for clarification	X			
8	Req. 6	The operator shall implement planning for decommissioning and carry out the decommissioning actions in compliance with the <u>license/authorization and national</u> safety standards and requirements <u>derived from the national legal framework</u> . The operator is responsible for all aspects of safety and environmental protection during decommissioning. The operator shall provide financial assurances and resources to cover the costs associated with safe decommissioning, including management of resulting radioactive waste.	For clarification	X	The general term, “authorization”, will be used instead of license.		
9	7.4	A baseline survey of the site, including obtaining information on radiological	A baseline survey which consists of the	X	See response to Germany comment		

		conditions, is performed prior to construction <del>and updated prior to commissioning</del> of a new facility. This information will be used to determine radiological background conditions. For those activities where such a baseline survey has not been done in the past, data from analogous and undisturbed areas with similar characteristics are used instead of pre-operational baseline data.	hydrological and geological characterization of the site and is usually performed prior to the construction of a nuclear installation (e.g. storage facilities, NPP). Prior to commissioning the baseline data (paperwork) can be updated but not the baseline survey itself.		#31.		
10	7.5	The operator prepares and submits an initial decommissioning plan together with the application for authorization to operate the facility. This initial decommissioning plan <del>is</del> <u>and supporting documents are</u> necessary to assure that sufficient funds will be available for decommissioning, to facilitate early planning for minimization of decontamination, to identify categories and estimate quantities of waste.	Funding should not be treated directly in the decommissioning plan ; the proposed modification is consistent with point 7.11 (point 7.10 in the previous draft of DS 450 and which has been modified in that way)			X	Funding is a fundamental requirement that should be addressed and should be included in the decommissioning plan.
11	7.6	7.6. The initial decommissioning plan is updated by operator and reviewed by <u>the regulatory body periodically, in the same timeframe as valid for periodic safety reviews of the operating facility.</u> at least every <del>five</del> <u>ten</u> years or as prescribed by the regulatory body, or when specific circumstances warrant, such as if changes in an operational process lead to significant changes to the plan. Updates are made as necessary in the light of operational experience gained, lessons learned from decommissioning of similar facilities, new or revised safety requirements or technological developments and selected decommissioning strategy. If an accident or event <u>with relevant consequences for decommissioning</u> occurs, the initial decommissioning plan is updated as soon as possible and reviewed.	<p>The review should be performed together with the PSR for operating plants. From the safety point of view the PSR timeframe is set to 10 years for NPPs – the review period regarding decomm. should not be shorter.</p> <p>Alternative: leave out timeframes in the requirement generally and give examples in the related guides.</p> <p>Each AOO in an NPP is an event, which would require an update of the init. Decomm. plan – it should be limited to relevant events!</p>			X	This issue was discussed at the consultancies to revised the document and a Technical Meeting which was organized to provide feedback on the proposed new revisions to the IAEA's decommissioning safety standards in early 2012. The Secretariat does not support these changes, as there is sufficient flexibility in the wording as it stands. Performing a periodic safety review every 10 years and updating the initial decommissioning plan could result in inefficiencies if they are

							done just before the beginning of decommissioning. Further discussions and advice are needed from the Safety Standards Committees.
12	7.8 and 7.9		Once it is stated “operational authorization”, once “operational license” – there should be one wording (also see our general comment regarding “operator”)	X			
13	7.10	7.10. The operator informs the regulatory body prior to permanently shutting down the facility. If a facility is <u>permanently</u> shut down and/or no longer used for its intended purpose, a final decommissioning plan is submitted for approval <u>in a timely manner after</u> <del>within two years of</del> the cessation of authorized activities, unless an alternative schedule is prescribed by the regulatory body. The operator ensures that the facility is maintained in a safe configuration during transition and until the approval of the final decommissioning plan.	In the case of an unexpected shutdown (e.g. accident or political decision) it might not be possible to submit a final decomm.-plan within this timeframe – additionally from the safety point of view there is no gain in fixing two years.  Alternative: Leave out timeframes in the requirement generally and give examples in the related guides.			X	See response to Germany comment #34.
14	7.14	Updates of the final decommissioning plan are made as necessary in the light of decommissioning experience gained, new or revised safety requirements, new or revised national regulations, <del>or technological developments</del> . Updates of the final decommissioning plan by the operator are reviewed and approved by the regulatory body.	Decommissioning actions have not to be done using the latest state of the art technology – the goal is safe decommissioning not the most modern one.	X			
15	8.1	The operator will not implement the final decommissioning plan until the regulatory body has approved it. <del>Updates to this plan are submitted to and approved by the regulatory body.</del>	Repetition of 7.14	X			
16	8.2 and 8.3		These points are points for the			X	We prefer to keep these

			final decommissioning plan and should be placed there.				paragraphs under conducting decommissioning actions.
17	8.4	Based on the final decommissioning plan, decontamination and dismantling techniques are used such that the protection of workers, the public and the environment is optimized and the generation of waste is, <u>as far as reasonable practicable</u> , minimized. Decommissioning actions such as decontamination, cutting and handling of large equipment, and the progressive dismantling or removal of safety systems have the potential for creating new hazards. The impacts on safety of these actions are assessed and managed so that these hazards are mitigated and radiation exposures are kept within acceptable limits and constraints.	For clarification	X			
18	8.5	The regulatory body makes arrangements for and implements the inspection and review of the decommissioning actions to ensure that they are being carried out in accordance with the <u>authorisation/license and the</u> final decommissioning plan and with other requirements <u>derived from the national legal framework</u> for which the regulatory body has oversight responsibility. Whenever safety requirements and conditions for authorization are not met, the regulatory body takes appropriate enforcement actions.	For clarification	X	The general term, “authorization”, will be used instead of license		

**Draft Safety Requirements DS450 “Safe Decommissioning of Facilities”**  
(Version dated 20 April 2012)

	COMMENTS BY REVIEWER				RESOLUTION			
	Reviewer: <b>Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) with comments of GRS and BfS</b> Country/Organization: <b>Germany</b>				Page 1 of 17 Date: 2012-05-25			
Relevance	Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
3	1	1.1	2 <sup>nd</sup> sentence: “The term ‘decommissioning’ refers to the administrative and technical actions taken to allow the <u>subsequent</u> removal of some or all of the regulatory requirements from a facility (except for a disposal facility, for which the term ‘closed’ and not ‘de-commissioned’ ‘closure’ instead of ‘de-commissioning’ is used).”	Wording.	<b>X</b>			
3	2 (a/b)	1.2	“Aspects of decommissioning typically include planning for decommissioning, conducting decommissioning actions, <u>and terminating the authorization and releasing the site for restricted or unrestricted use.</u> <del>They</del> There may be a transition period between the permanent shutdown and authorization to begin decommissioning actions is granted.”	Completion; Grammar.	<b>X</b>	The grammar change will be incorporated into the document.	<b>X</b>	Paragraph 1.7 will be revised to: “Termination involves the demonstration of compliance with the conditions of the authorization for decommissioning the facility, removal of this authorization, and the release of the facility for restricted or unrestricted use.”
3	3	1.4	“A facility ... means a building and its associated <del>land</del> site and equipment in which radioactive material is produced, processed, used, handled or stored ... <del>Land</del> Site includes the surface, subsurface soil horizons and any surface or subsurface water or aquifers ...”	Wording. Elsewhere in the draft, the term ‘site’ is used without exception.			<b>X</b>	In this document, a site could include a group of facilities while a land is the impacted area around the facility.
3	4	1.5	2 <sup>nd</sup> sentence:	Dispensable phrase.	<b>X</b>			

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

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Relevance	Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			“Decommissioning is undertaken on the basis of planning and assessment to ensure the safety of workers and the public and protection of the environment, <del>both during and after decommissioning.</del> ”					
2	5	1.6	2 <sup>nd</sup> sentence: “Subject to national legal and regulatory requirements, this end state may encompass <del>decontamination and/or dismantlement, with or without restrictions on future use</del> <u>the termination of authorization and the release of the site for restricted or unrestricted use.</u> ”	Clarification.	<b>X</b>	Paragraph 1.6 will be revised to: “Subject to national legal and regulatory requirements, this end state is a result of conducting decontamination and/or dismantlement, leading to the release of the site for restricted or unrestricted use.”		
3	6	1.8	1 <sup>st</sup> and 2 <sup>nd</sup> sentence: “ <del>Planning for decommissioning does not begin at the permanent shutdown of the facility but begins at the facility’s design stage and is considered throughout the life of the facility.</del> <u>Planning for decommissioning</u> includes the selection of a decommissioning strategy, ...”	The content of the first sentence is already included in para 1.1 (last sentence).	<b>X</b>	See response to USA comment #8.		
3	7	1.8	3 <sup>rd</sup> sentence: “Conducting decommissioning actions include managing the project, implementing the approved final decommissioning plan, managing the waste ( <u>i.e. radioactive waste and non-radioactive hazardous waste</u> ), conducting oversight activities by the regulatory body and ...”	Clarification.	<b>X</b>	Paragraph 1.19 notes that this document addresses only radiological hazards. The document does not subsequently distinguish between radiological and non-radioactive waste.		
2	8	1.8	2 <sup>nd</sup> bullet point: “Deferred dismantling (sometimes called safe storage, safe store or safe enclosure) is the strategy in which, <u>after removal of the nuclear</u>	The term ‘radioactive material’ as defined in the IAEA Safety Glossary (2007 Edition) does not explicitly	<b>X</b>	Paragraph 1.8 will be revised to: “Deferred dismantling (sometimes called safe storage, safe		

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial



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	Reviewer: <b>Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) with comments of GRS and BfS</b> Country/Organization: <b>Germany</b>				Page 1 of 17 Date: 2012-05-25			
Relevance	Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			<u>fuel</u> , all or part of a facility containing radioactive material are either processed or placed in such a condition that they can be safely stored and the facility maintained until it is subsequently decontaminated and/or dismantled.”	exclude nuclear fuel. We propose an additional subordinate clause “after removal of the nuclear fuel” for clarification that the nuclear fuel should be removed before transferring the facility into safe storage.		store or safe enclosure) is the strategy in which, <u>after removal of the nuclear fuel (in the case of nuclear installations)</u> , all or part of a facility containing radioactive material are either processed or placed in such a condition that they can be safely stored and the facility maintained until it is subsequently decontaminated and/or dismantled.”		
2	9 (a/b)	1.15	1 <sup>st</sup> sentence: “This publication establishes the safety requirements for all aspects of decommissioning from the siting and design of a facility to the termination of the regulatory authorization <u>and release of the site for restricted or unrestricted use</u> .”  2 <sup>nd</sup> sentence: “Most of the provisions contained in this safety standard can also be applied to decommissioning after an accident, <u>incident or another reportable</u> event that has resulted in ...”	Completion. See also our comments to paras 1.2 and 1.6.  Completion for consistency with the classification of events according to the International Nuclear and Radiological Event Scale (INES).	X	We agree with the 2 <sup>nd</sup> sentence new text.	X	Regarding 1 <sup>st</sup> sentence, see response to comment #2 above.
2	10	1.16	2 <sup>nd</sup> and 3 <sup>rd</sup> sentence: “It does not apply to radioactive waste disposal facilities and disposal facilities for NORM or <u>waste from mining and mineral processing</u> . The closure of these facilities is discussed in <u>another IAEA publications [4, 5] [10]</u> .”	Clarification. Wrong publications are cited; relevant are the Safety Requirements SSR-5 “Disposal of Radioactive Waste”.	X			
2	11	1.17	2 <sup>nd</sup> sentence:	Completion for consistency	X			

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

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	Reviewer: <b>Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) with comments of GRS and BfS</b> Country/Organization: <b>Germany</b>				Page 1 of 17 Date: 2012-05-25			
Relevance	Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			“There may be areas of land that have become contaminated incidental to the normal operation of the facility, which would not constitute an accident, <u>incident and or another reportable event.</u> ”	with the classification of events according to the International Nuclear and Radiological Event Scale (INES).				
3	12	1.18	“The management of <del>new</del> <u>fresh</u> and spent nuclear fuel and <u>radioactive</u> waste generated during operations are not usually considered part of decommissioning, ...”	Wording.	X			
2	13	1.19	last sentence: “ <del>However, these issues are outside of</del> <u>Although the non-radiological hazards should be assessed in conjunction with the radiological hazards to find an optimal decommissioning strategy, the scope of this publication and does not include the manner in which this can be achieved. Therefore, these issues</u> are not explicitly addressed in this Safety Requirements.”	Clarification.			X	Global optimization (radiological and other hazards) is somewhat beyond the scope of the IAEA.
2	14	Section 2, Requirement 1	“ <del>Decommissioning shall be considered part of the original activity</del> <u>Radiation protection is an essential part of decommissioning activities</u> and the requirements of the Basic Safety Standards (BSS) [5] shall be enforced during decommissioning.”	Clarification. The term ‘original activity’ is not well defined.	X	See response to USA comment #22.		
3	15	2.1	2 <sup>nd</sup> sentence: “Radiation protection of any persons that are exposed as a result of decommissioning <del>are</del> <u>is</u> optimized with due regard to the relevant dose constraints.”	Grammar.	X			
2	16	2.2	1 <sup>st</sup> sentence: “... provision is made during decommissioning for protection against, and mitigation of, potential exposures that may result from an accident, <u>incident or another credible event.</u> ”	Completion for consistency with the classification of events according to the International Nuclear and Radiological Event Scale (INES) which also applies to	X			

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

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	Reviewer: <b>Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) with comments of GRS and BfS</b> Country/Organization: <b>Germany</b>				Page 1 of 17 Date: 2012-05-25			
Relevance	Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				facilities under decommissioning. The term 'credible' means believable on the basis of commonly accepted engineering judgement.				
3	17	2.5	"The type of information and the level of detail in the decommissioning plan are commensurate with the type, scale, complexity, status and lifecycle stage of the facility and the <u>radiological and non-radiological</u> hazards associated with the decommissioning of the facility."	Clarification. Compare with the text in para 1.19.			X	See response to comment #7 above.
3	18	2.6	"The final decommissioning plan is supported by a safety assessment addressing the planned decommissioning actions and <u>credible</u> events, <u>incidents</u> or accidents that may occur during decommissioning."	Completion. The term 'credible' means believable on the basis of commonly accepted engineering judgement.	X			
2	19	Section 3, Requirement 4	last sentence: "All aspects of decommissioning shall be regulated, from the siting and design of a facility to termination of authorization <u>and release of the site for restricted or unrestricted use.</u> "	Completion. See also our comment to para 1.15.			X	See response to comment #2 above.
2	20	Section 3, Requirement 5	1 <sup>st</sup> sentence: "The regulatory body is responsible for the regulation of all aspects of decommissioning, from siting and design of the facility to <del>completion of decommissioning actions</del> and termination of authorization <u>and release of the site for restricted or unrestricted use.</u> "	See our comment to Requirement 4. Equivalent wording is recommended.			X	See response to comment #2 above.

2	21	3.3	1 <sup>st</sup> bullet point: "The responsibilities of the regulatory body include:	As no specification is provided, it is not clear which criteria for the commence-			X	The safety guides will provide details on the criteria and
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Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

			<ul style="list-style-type: none"> <li><del>establishing criteria defining conditions and timeframe</del> for the commencement of decommissioning; ...”</li> </ul>	ment of decommissioning are envisaged, against which a testing might be carried out within the regulatory approval procedure. The timeframe for the commencement of decommissioning depends on various parameters. It seems not to be appropriate to regulate this issue.				timeframe for commencement of decommissioning.
1	22	3.4	3 <sup>rd</sup> bullet point: “The responsibilities of the operator include: ... <ul style="list-style-type: none"> <li><del>notifying the regulatory body prior to permanently shutting down the facility or permanently ceasing operations;</del> ...”</li> </ul>	In a system of close inspection of authorization, licensing conditions and safety requirements, the regulatory body is aware of the state of the facility at all time. Therefore, this bullet point is not needed.			X	In some Member States, a system of close inspection is not always observed, leading to abandoned facilities which require decommissioning.
2	23 (a/b)	3.4	5 <sup>th</sup> bullet point: “The responsibilities of the operator include: ... <ul style="list-style-type: none"> <li>identifying a destination for all <u>radioactive</u> waste arising from decommissioning actions <u>and processing the waste appropriately;</u> ...”</li> </ul>	The identification of a destination for the radioactive waste is the first step. The processing of the waste according to specified acceptance criteria and/or requirements established by the destination is the second step.	X	Paragraph 3.4, 5 <sup>th</sup> bullet will be revised to include: “ <u>processing the waste appropriately;</u> ...”	X	Regarding the inclusion of the term, “radioactive”, see response to comment #7 above.
1	24	3.4	add new bullet point: <ul style="list-style-type: none"> <li>“<u>ensuring that the facility is maintained in a safe configuration during transition and until the approval of the final decommissioning plan;</u>”</li> </ul>	The proposed bullet point contains the deleted last sentence from para 7.10 (see our comments to this para). It defines a requirement for the responsibility of the operator but not for the final decommissioning plan.	X			
1	25	3.4	add new bullet point: <ul style="list-style-type: none"> <li>“<u>applying for a license for authorization of the planned decommissioning activities by the regulatory body, depending on national regulations;</u>”</li> </ul>	In some Member States, the application for a decommissioning license is a necessary step in order to comply with legal regulations.	X	Paragraph 3.4 will be revised to be consistent with paragraph 3.3: “submitting a decommissioning plan and supporting documents		

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						for review and approval by the regulatory body, depending on national regulations in order to receive an authorization for decommissioning;”		
3	26	4.1	4.1. ...	Add missing dot after the number of para.	X			
3	27	4.5	2 <sup>nd</sup> sentence: “The decommissioning management also ensures that appropriate authority for stopping decommissioning tasks <del>work</del> is provided.”	More precise terminology for clarification.	X	Paragraph 4.5 will be revised to change “work” to “actions” consistent with paragraph 1.3.		
3	28	6.4	“If the decommissioned facility is released with restrictions on its future use, financial assurance ensures that funding covers the facility and its monitoring, surveillance and control through the necessary time period <del>for long-term stewardship</del> .”	Clarification. The term ‘stewardship’ is neither defined in the IAEA Safety Glossary (2007 Edition) nor used in other Safety Standards.	X			
2	29 (a/b)	7.1	“For new facilities, consideration of decommissioning begins early in the <del>design</del> siting stage (e.g. <u>lifecycle cost analysis for a planned nuclear facility when comparing and ranking candidate sites</u> ) and continues through to the termination of authorization <u>and release of the site for restricted or unrestricted use</u> . The regulatory body ensures that operators take into account decommissioning in the <u>siting</u> , design, ...”	Consistency with para 1.1 (last sentence) as well as with the Draft Safety Guide DS433 “Safety Aspects in Siting for Nuclear Installations” (see Annex III “Comparison and Ranking of Candidate Sites”).	X	Paragraph 7.1 will be revised to: “For new facilities, consideration of decommissioning begins early in the siting stage and continues through to the termination of authorization. The regulatory body ensures that operators take into account decommissioning in the siting, design...”	X	The safety guide will provide details such as lifecycle cost analysis for a planned nuclear facility when comparing and ranking candidate sites.
2	30	7.2	“... a suitable plan for decommissioning is prepared as soon as possible, once the regulatory body has provided requirements and guidance, and the plan is periodically <u>re-viewed and updated</u> .”	Clarification and completion. An update implies a precedent review of the decommissioning plan.	X			
3	31	7.4	1 <sup>st</sup> and 3 <sup>rd</sup> sentence: “A <del>baseline</del> <u>background</u> survey of the site, including obtaining information on radiological conditions, is performed prior to construction and updated prior to commissioning of a	Consistency with the terminology used in the IAEA Safety Glossary (2007 Edition).	X	Paragraph 7.4 will be revised to: “A background survey of the site, including obtaining information on radiolo-		

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

			new facility. ... For those activities where such a <del>baseline background</del> survey has not been done in the past, data from analogous and undisturbed areas with similar characteristics are used instead of pre-operational <del>baseline background</del> data.”			gical conditions, is performed prior to construction. The baseline data from the survey will be updated prior to commissioning of a new facility. This information will be used to determine radiological background conditions. For those activities where such a background survey has not been done in the past, data from analogous and undisturbed areas with similar characteristics are used instead of pre-operational baseline data.”		
2	32	7.6	1 <sup>st</sup> and last sentence: “The initial decommissioning plan is updated by <u>the</u> operator and reviewed by <u>the</u> regulatory body periodically, ... If an accident, <u>incident</u> or <u>another reportable</u> event occurs, the initial decommissioning plan is updated <u>by the operator</u> as soon as possible and reviewed <u>by the regulatory body</u> .”	Wording and completion for consistency with the classification of events according to the International Nuclear and Radiological Event Scale (INES).	<b>X</b>			
1	33	7.10	Delete the first sentence (“The operator informs the regulatory body prior to permanently shutting down the facility.”).	The first sentence defines a requirement for the responsibility of the operator but not for the final decommissioning plan. Moreover, in a system of close inspection of authorization, licensing conditions and safety requirements, the regulatory body is aware of the state of the facility at all time. Therefore, this sentence is dispensable. See also our comment to para 3.4.			<b>X</b>	See response to comment #22 above.

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

1	34	7.10	<p>2<sup>nd</sup> sentence:          “If a facility is shut down and/or no longer used for its intended purpose, a final decommissioning plan is submitted for approval <del>within two years of the cessation of authorized activities, unless an alternative schedule is prescribed by the regulatory body.</del>”</p>	<p>The requirement to submit a final decommissioning plan no later than two years after termination of practices must be scrutinized as such a restriction does not foster safety issues. Setting a fixed period of time means that this requirement is rather implementation-oriented than safety-oriented. The period for the submission of a final decommissioning plan might be recommended in the subordinated Safety Guide DS452.</p>				X	<p>This issue was discussed at consultancies to revise the document and a Technical Meeting which was organized to provide feedback on the proposed new revisions to the IAEA’s decommissioning safety standards in early 2012. While the Secretariat does not support deleting the time period, further discussions and advice are needed from the Safety Standards Committees. The two year time period was included in WS-R-5 (published in 2006) because experience has shown that the transition period from operations to decommissioning has to be as short as possible for many well-known reasons identified by a number of Member States including aging, loss of knowledge and skills, cost, and monitoring. We kept the time period to prevent long</p>
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Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

								term liabilities—that are a safety issue. In addition, the time period was chosen because a few Member States have noted they meet this two year time period. The wording in DS450 offers the flexibility suggested under your reasons.
1	35	7.10	Delete the last sentence (“The operator ensures that the facility is maintained in a safe configuration ...”) and move the content to para 3.4 as a separate bullet point.	The last sentence defines a requirement for the responsibility of the operator but not for the final decommissioning plan. See also our comment to para 3.4.	X			
1	36	7.11	“The final decommissioning plan and supporting documents includes the decommissioning strategy; the decommissioning actions; the proposed end state and how the operator will demonstrate that the end state has been achieved; <del>the timeframe for decommissioning</del> and the funding for completion of the decommissioning.”	The requirement that the timeframe for decommissioning shall be approved by the regulatory body is not safety-oriented. Instead, the timeframe should only be mentioned for information, e.g. during stakeholder involvement. Otherwise, any changes in the originally planned timeframe would have to be reviewed and approved by the regulatory body, which might cause further delays in the decommissioning process.			X	The final decommissioning plan needs to include the timeframe for decommissioning to consider safety issues such as aging of equipment. The timeframe will also assist the regulatory body in preparing to review the decommissioning plan and its supporting documents.
3	37 (a/b)	7.13	“The final decommissioning plan or <u>its</u> updates can include new, <u>innovative</u> technologies <u>and concepts</u> for decommissioning actions. Prior to using them, it is demonstrated that the use of such methods <del>are</del> <u>is</u> safe and can effectively achieve the desired end result.”	Wording; Grammar.	X	Paragraph 7.13 will be revised to change “are” to “is” and “concept” will be added.	X	The technology for decommissioning does not necessarily need to be innovative.

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial



2	38	8.2	2 <sup>nd</sup> sentence: “An adequate <u>programme</u> for maintenance, <u>monitoring</u> and surveillance <del>programme</del> , which is subject to the approval of the regulatory body, is developed to ensure safety during the period of deferment.”	Completion and consistency with para 6.4. In the context of this draft, the term ‘surveillance’ refers to the physical inspection of the facility in order to verify its integrity to protect and preserve the passive safety barriers. The term ‘monitoring’ refers to continuous or periodic measurements of radiological, environmental or engineering parameters in order to evaluate the status of the facility by tracking plant variables, to evaluate the impact of the facility on the public and the environment, and to detect unexpected degradation once it has occurred.	<b>X</b>			
2	39	8.3	2 <sup>nd</sup> sentence: “An adequate <u>programme</u> for maintenance, <u>monitoring</u> and surveillance <del>programme</del> , which is subject to the approval of the regulatory body, is developed to ensure safety during the period of entombment.”	Completion and consistency with para 6.4. See also our comment to para 8.2.	<b>X</b>			
2	40	8.4	1 <sup>st</sup> and last sentence: “... such that the protection of workers, the public and the environment is optimized and the generation of <u>radioactive</u> waste is minimized. ... The impacts on safety of these actions are assessed and managed so that these hazards are mitigated and radiation exposures of <u>operating personnel</u> are kept within <del>acceptable</del> <u>approved</u> dose limits and/or <u>acceptable</u> dose constraints.”	Clarification and completion. Compare with the text in para 2.1. Dose limits are established by the regulatory body. Dose constraints are to be established and used in the optimization of protection and safety by the operator (see Safety Requirements GSR Part 3, para 1.23).	<b>X</b>	Paragraph 8.4 will be revised to: “exposures of workers are kept within established dose limits and dose constraints shall not be exceeded.” The term, “radioactive”, will be added.		.
1	41	Section 8, Requirement 14	title: “ <u>Radioactive</u> Waste Management” “A <del>waste management</del> strategy for the man-	Paras 8.7 – 8.10 associated with Requirement 14 address only aspects of dispos-	<b>X</b>			

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

			agement of radioactive waste arising from decommissioning shall be established for all waste streams arising from decommissioning.”	al of radioactive waste. If it is intended to address the management of waste streams in a broader sense, further aspects (e.g. clearance of materials from regulatory control, reuse of materials, etc.) should be mentioned here as well, providing a link to the Safety Requirements GSR Part 3.				
1	42	8.8	“Prior to starting decommissioning, the operator ensures the availability of, to the extent possible, adequate waste processing, and storage and disposal capacity for the wastes resulting from the decommissioning.”	The capacity and construction of a disposal facility are usually the result of a political decision on the management of radioactive waste at national level. The operator has to provide and ensure adequate financial resources to cover the costs for construction, operation and closure of a suitable disposal facility. The non-availability of a disposal facility (e.g. since a final decision on a disposal site has not yet been made) should not jeopardize the decommissioning process. However, it may affect the selection of a decommissioning strategy by the operator and the timeframe for decommissioning.	X	See response to USA comment #36.		
3	43	8.9	Delete this para.	This topic is already covered by para 8.7. Unnecessary doubling should be avoided.	X			
2	44	8.10	“If operational waste or nuclear fuel remains at the site after permanent shutdown of a facility, then such material is removed and transported to an authorized facility in compliance with applicable regulations [11], or ...”	This para provides a useful link to the IAEA Safety Requirements TS-R-1 (2009 Edition). We therefore propose to include a new Ref. [11] to the relevant transport	X			

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

				regulations.				
3	45	Section 9, Requirement 15	title: “Completion of Decommissioning <del>actions</del> <u>Actions</u> and Termination of Authorization”	Editorial.	<b>X</b>			
3	46	9.4	“If <u>radioactive</u> waste is stored on the site after decommissioning is completed, a revised or new, separate authorization, including requirements for decommissioning, is issued for the storage facility.”	Completion.	<b>X</b>			
2	47	9.5	1 <sup>st</sup> and 2 <sup>nd</sup> sentence: “If the approved end state is to release the facility with restrictions on future use, appropriate controls <u>and programmes for monitoring and surveillance</u> are maintained to ensure the protection of human health and the environment. Clear responsibility is assigned for implementing and maintaining these controls <u>and programmes</u> .”	Completion and consistency with para 6.4. See also our comments to paras 8.2 and 8.3.	<b>X</b>			
3	48	Ref. [2]	“–INTERNATIONAL ATOMIC ENERGY AGENCY, ...”	Delete space before “INTERNATIONAL”.	<b>X</b>			
3	49	Ref. [5]	“... new title: Radiation Protection and Safety of Radiation Sources: <u>International Basic Safety Standards</u> , IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2011 <del>X</del> )”	The new Basic Safety Standards (GSR Part 3, Interim Edition) were published in November 2011.	<b>X</b>			
3	50	Ref. [9]	“... Safety Series No. GS-R-2, IAEA, Vienna (2002) <u>UNDER REVISION</u> ; new title: ...”	Add space between “(2002)” and “UNDER REVISION”.	<b>X</b>			
2	51	List of references	include new Ref. [11]: “ <u>INTERNATIONAL ATOMIC ENERGY AGENCY, Regulations for the Safe Transport of Radioactive Material, 2009 Edition, IAEA Safety Standards Series No. TS-R-1, IAEA, Vienna (2009)</u> .”	See our comment to para 8.10.	<b>X</b>			

Relevance: 1 – Essentials 2 – Clarification 3 – Wording/Editorial

## DS450 Safe Decommissioning of Facilities

COMMENTS BY REVIEWER Reviewer: Page 1 of 3 Country/Organization: Japan/ Nuclear and Industrial Safety Agency (NISA) Date: 24 May 2012				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	General	Clarify to what extent the terms ‘accident’ and ‘(abnormal) event’ can be included in this requirement. The scope of “accident” is might be taken into account in the framework of the related safety standards and clarified in the Glossary.	Comment	<b>X</b>	Paragraphs 1.15 and 1.17 address the application of this document after an accident or event. In this case, the first priority is the management of the emergency. After the facility has been stabilized (e.g., brought to a safe configuration), the provisions in this document could be applied. The document uses terms as recommended by the Safety Glossary, unless noted.		
2	General	General terms should be used in this requirement.	Clause 1.16 mentions that This publication applies to all types of nuclear facilities without waste disposal facility. However, many terms used in the requirement are related to nuclear reactors (e. g. shutdown). Thus trouble might occur in applying this requirement.	<b>X</b>	A footnote will be added to clarify the term, shutdown.		
3	Title	Safe Decommissioning of Facilities →Decommissioning and Termination of Activities	The figure of the long term set of Safety Standards shows “Part6. Decommissioning and Termination of Activities.” And the title is also different from the one recommended in the CM on August 2011. Some explanation about the change might be	<b>X</b>	In December 2011 at the WASSC 32 meeting, the Secretariat was advised to change the title to “Decommissioning”. In addition, this		

			required.		suggested title was discussed at a Technical Meeting which was organized to provide feedback on the proposed new revisions to the IAEA's decommissioning safety standards in early 2012. The use of the shortened title had positive feedback during the Technical Meeting. In April 2012, the IAEA Coordination Committee suggested the current title, which will need to be approved by the Safety Standards Committees.		
4	1.12 (p.3)	Basically definitions of terms using in IAEA Safety Standards are consistent with IAEA Safety Glossary. We require some explanation about the addition of this Clause.	Clarification	X	The Strategies and Processes for the Establishment of IAEA Safety Standards (SPSS) notes "All IAEA publications should refer to the IAEA Safety Glossary for the definitions and explanation of safety related terms specify in the list of references which edition of the Safety Glossary is used." The inclusion of this clause is consistent with other safety standards (e.g., GSR Part 1).		

### DS450 Safe Decommissioning of Facilities

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Country/Organization: Japan / Nuclear and Industrial Safety Agency (NISA) Date:24 May 2012 Page 2 of 3							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
5	1.15 (p.3)	Some texts to explain briefly aspects of decommissioning in the siting should be added.	Current Safety Requirements (WS-R-5) and former Safety Requirements (WS-R-2) refer to consideration of decommissioning from the design. In this draft the siting is newly added, hence some description to explain why the concept is expanded is needed. Moreover, other clauses (e. g. 7.1) should be conformed in accordance with the concept.	X	Paragraph 1.1 was revised to further clarify the definition of decommissioning which was significantly discussed during the consultancy meeting to draft the revised document in August 2011. Siting was included throughout the document beginning with paragraph 1.1, consistent with footnote 7 in page 36 of the Safety Glossary. Paragraph 7.1 will be revised to include the "siting stage."		
6	1.16/2-3 (p.3)	Add footnote on NORM facilities.	The term "NORM facilities" is new term and is not defined in IAEA Safety Glossary.	X			
7	1.16/5 (p.3)	It does not apply to radioactive waste disposal facilities and disposal facilities for NORM or mining <u>waste</u> . The closure of these facilities is discussed in other IAEA publications [4, 5, 10].	GSR Part3 and Part5 do not address the closure of these facilities. The relevant document for the closure of these facilities is SSR-5.	X	See response to German comment #10.		
8	After page 4	Page number is misaligned.	Editorial error.	X			
9	2.3/3 (p.2)	[5, 8]	GS-R-3 also mentions safety culture.	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Page 3 of 3 Country/Organization: Japan / Nuclear and Industrial Safety Agency (NISA) Date: 24 May 2012							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
10	7. (p.11)	We expect that the criteria or the concept for approval of decommission plans by regulators will be taken into account in the safety guide.	Clarification	<b>X</b>			
11	7.7/1 (p.12)	(e.g. <u>records on the use of the facility, events and incidents, radionuclide inventories, dose rates and contamination levels</u> )	This description is vague so the original text of the paragraph 5.9 of WS-R-5 should be remained.			<b>X</b>	The safety guides will provide detailed guidance for recordkeeping.
12	<b>CONTRIBUTORS TO DRAFTING AND REVIEW</b> (p.16)	Yamamoto, M. <sup>2</sup> <u>Radioactive Waste Management Funding and Research Center(RWMC)</u> <del>Nuclear and Industrial Safety Agency</del> , Japan	Editorial error.	<b>X</b>			

**SAFE DECOMMISSIONING OF FACILITIES (DS 450) version04/20/2012.**

<b>COMMENTS BY REVIEWER</b> <b>Reviewer:</b> <b>Country/Organization:</b> SPAIN /WASSC/ Consejo de Seguridad Nuclear <b>Date:</b> 24/05/12							
<b>Comment Nr.</b>	<b>Para/Line No.</b>	<b>Proposed new text</b>	<b>Reason</b>	<b>Accepted</b>	<b>Accepted, but modified as follows</b>	<b>Rejected</b>	<b>Reason for modification/rejection</b>
1	General Comment	From the text of the document it is not clear the possibility of decommissioning of a part of the facility (Partial decommissioning and subsequent partial site release considering buildings and land). It seems intrinsically recognised in 1.1 but it is not clear.	Clarification	<b>X</b>	Paragraph 5.5 will be revised to: "For sites that house more than one facility, a site strategy for decommissioning is developed to ensure that interdependencies are taken into account during the planning for individual facilities which will lead to final decommissioning plans for each facility (e.g., partial decommissioning).  New explanatory text will be inserted in Chapter 9: "In the case of partial decommissioning, a revised or new separate authorization shall be issued, if appropriate."		
2	1.4/4	...water or aquifers <i>potentially</i> impacted by...	To be coherent with the statement in the line 3 of this paragraph in which a degree of hazard and risk is considered.	<b>X</b>			
3	1.6/1	...end state <i>of the site (including buildings and</i>	Clarification	<b>X</b>	Paragraph 1.6 will be revised to: "end state of the facility		



**SAFE DECOMMISSIONING OF FACILITIES (DS 450) version04/20/2012.**

<b>COMMENTS BY REVIEWER</b>							
<b>Reviewer:</b>							
<b>Country/Organization:</b> SPAIN /WASSC/ Consejo de Seguridad Nuclear							
<b>Date:</b> 24/05/12							
<b>Comment Nr.</b>	<b>Para/Line No.</b>	<b>Proposed new text</b>	<b>Reason</b>	<b>Accepted</b>	<b>Accepted, but modified as follows</b>	<b>Rejected</b>	<b>Reason for modification/rejection</b>
		<i>associated land</i> ) has been reached			has been reached” consistent with Paragraph 1.4.		
4	1.7	... facility <i>or the issuance of a new one when a partial decommissioning has been performed.</i>	Coherence. See comment Nr 1. When a partial decommissioning of a facility has been performed a new authorisation (or modification) is needed.	<b>X</b>	See response to comment #1 above.		
5	2.3	Move to 3.3 and 3.4	This paragraph describes responsibilities of the operator and the regulatory body and is not directly related to radiation protection.	<b>X</b>			
6	4.3/1	Delete “although it is permissible to delegate the performance of specific tasks to contractors”	It is confusing, as it seems to indicate that contractors also have responsibilities for safety. Their responsibilities must be established in their contracts.	<b>X</b>	Paragraph 4.3 will be revised to: “The ultimate responsibility for safety remains with the operator. It is permissible to delegate the performance of specific tasks to contractors and the decommissioning management ensures that the work of contractors is appropriately controlled so		

**SAFE DECOMMISSIONING OF FACILITIES (DS 450) version04/20/2012.**

<b>COMMENTS BY REVIEWER</b>							
<b>Reviewer:</b>							
<b>Country/Organization:</b> SPAIN /WASSC/ Consejo de Seguridad Nuclear							
<b>Date:</b> 24/05/12							
<b>Comment Nr.</b>	<b>Para/Line No.</b>	<b>Proposed new text</b>	<b>Reason</b>	<b>Accepted</b>	<b>Accepted, but modified as follows</b>	<b>Rejected</b>	<b>Reason for modification/rejection</b>
					that it is conducted safely.”		
7	8.5	Delete and complete bullet 7 <sup>th</sup> of 3.3 with the information of this paragraph.	This paragraph describes responsibilities of the regulatory body that are already mentioned in 3.3. As it has more detail, paragraph 3.3 might be completed with these information.			<b>X</b>	Paragraph 8.5 is included in this chapter to highlight the need to perform inspections while conducting decommissioning actions.
8	9.3	Complete with the responsibilities of record keeping during decommissioning and after if any	There is not guidance about these responsibilities.			<b>X</b>	The safety guides will provide guidance on recordkeeping.
9	9.4/1	...is completed, <i>or the facility has been partially decommissioned</i> , a revised ...	Coherence. See comment Nr 1.	<b>X</b>	See response to comment #1 above.		

[DS 450]

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: [P BURROWS] Country/Organization: United Kingdom/[ONR]      Date: [30/05/12]							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	1.10	Suggest the words “e.g. severe accident” to follow “exceptional circumstances”.	To emphasise that entombment is not to be considered except in situations where there is no other alternative.	<b>X</b>			
		No further comments.					

## DS 450 Safe Decommissioning of the Facility

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:		Page 1 of 4					
Country/Organization: Ukraine, SSTC NRS		Date: 08.06.2012					
Com ment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
1	Section 2, Requirement 3: Assessment of safety. ii. 2.6 – 2.7	It should be added that assessment of decommissioning safety should start from the very beginning of the facility lifecycle and should be revised at all stages of the facility lifecycle.	Decommissioning safety issues are an important part of the safety assessment and should be taken into account at all stages of the facility lifecycle.			<b>X</b>	The concept that decommissioning must be considered throughout the six major stages of the lifecycle of an authorized facility and of the associated licensing process is discussed in Paragraph 1.1. Paragraph 2 references GSR Part 4, which notes safety assessment plays an important role throughout the lifetime of the facility or activity.

2	Section 3, Requirement 4: Responsibilities of the Government. i.3.2, bullet 2	The phrase in bullet could be stated as "...involved in decommissioning and management of resulting radioactive waste".	Similar to bullet 1. Addressing responsibilities for management of radioactive waste is very important for successful implementation of the whole decommissioning process.	<b>X</b>			
3	Section 3, Requirement 4: Responsibilities of the Government. i.3.2, bullet 4	The phrase in bullet could be stated as "...for safe and timely decommissioning and management of resulting radioactive waste".	Similar to bullet 1. Adequate funding of radioactive waste management is very important for successful implementation of the whole decommissioning process.	<b>X</b>			
4	Section 3, Requirement 5: Responsibilities of the Regulatory Body. i.3.3	It would be expedient to supplement the list in item 3.3 with the following bullets: "...establishing requirements for management of radioactive waste, resulting from decommissioning;" and "reviewing and approval of safety and environmental impact assessments, related to decommissioning actions;".	These issues are very important for ensuring safe decommissioning.			<b>X</b>	The requirement of waste management for waste streams arising from decommissioning is covered in Requirement 14. Paragraph 8.7 references the safety requirement for waste management. Regarding the addition of the 2nd bullet, paragraph 3.3 discusses "the decommissioning plan and supporting documents.

5	Section 3, Requirement 5: Responsibilities of the Operator. i.3.4	It would be expedient to supplement the list in item 3.4 with the following bullet: "...ensuring physical protection and fire safety of the facility in course of decommissioning".	These issues should be addressed to in the document.			X	The safety guides will provide these details.
6	Section 5, i.5.1.	The phrase could be stated as: "The selection of a decommissioning strategy is justified by the operator and approved by the regulatory body".	Selection of a decommissioning strategy is a key issue for the whole lifecycle of the facility, so it should be approved by the regulatory body.			X	See response to Belgium comment #1.
7	Section 7, Requirement 11: Final Decommissioning Plan	The phrase in bold could be stated as: "Prior to conducting of decommissioning actions, a final decommissioning plan shall be prepared and approved by the regulatory body".	The text in the document might be construed so that decommissioning actions may be started just after submission of final decommissioning plan to the regulatory body, without its approval.			X	
8	Section 7, i.7.16.	This item could be supplemented with the sentence as follows: "For the part of the facility, where radioactive substances are located, ageing of equipment and building structures must be taken into account, monitoring must be ensured, and, if necessary, measures to ensure reliability must be carried out".	Ageing of equipment and building structures in the part of the facility, where radioactive substances are located, is not taken into account.			X	The safety guides will provide these details.
9	Section 8, Requirement 14: Waste Management	The following item could be added: "The Operator is responsible for management of all waste streams resulting from decommissioning, unless otherwise is defined by the national legislation."	Issues, related to responsibility for waste management, are not clarified.			X	Paragraph 3.4, bullet 6 addresses the comment.
10	Section 8, Requirement 14: Waste Management, i.8.9, line 2	It would be better to replace the word "disposition" with the word "disposal".	The term "disposal" is used throughout the document.			X	See response to Germany comment #43.
11	Background, i.1.1, lines 6-7	The text in brackets could be stated as "(except for the disposal facility, for which the term "closure" but not decommissioning is used)".	In the whole document, the term "decommissioning" is used.	X	See response to Germany comment #2.		

## US NRC Comments on DS450 - GSR Part 6 “Safe Decommissioning of Facilities”

COMMENTS BY REVIEWER Reviewer: US NRC (Contact: Bobby Eid: bobby.abu-eid@nrc.gov; 301-415-5811) of 13. Country/Organization: USA /US NRC Date: May 24, 2012				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text/Comment	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	General	Throughout the document, the language of the text below each main requirement paragraph does not reflect enforcement regulatory (e.g.; requirement) style using “shall,” “must,” “are to,” “have to,” or “shall include.” terms similar to other IAEA published safety requirements. For example, “is,” “are” “include” and/or “may” expressions have been used reflecting statements rather than requirements. We recommend that such language be modified throughout the text to reflect regulatory requirement language consistent with the IAEA SPESS and common IAEA safety requirements style.	Language and consistency with the SPESS and with IAEA safety requirement style.	<b>X</b>			
2	Page 1 Para 1.1 Line 6	Revise text of last sentence to read:  “Information, data, and key aspects related to decommissioning, must be considered throughout these six major stages.”	Decommissioning officially occurs after cease of operation. However, certain aspects pertaining to decommissioning need to be addressed during stages of facility lifecycle. For example, siting, design, construction, and operational stages would develop information and generate data that be could be crucial to support decommissioning. In other words, what is actually required information, that will be important to decommissioning, be developed and maintained, and that the design, construction, and operation take advantage of any features that would minimize radiological releases and would facilitate and implement more efficient and less costly decommissioning at the end of the life cycle of the facility.	<b>X</b>	Paragraph 1.8 was revised to: “Planning for decommissioning includes the collection of information and data related to decommissioning to facilitate future decommissioning”		

					ning, selection of a decommissio ning strategy, performance of radiological characterizati on of the facility, preparation of a final decommissio ning plan and submittal of the plan to the regulatory body for review and approval and any public outreach activities required by national requirements. ”		
3	Page 1 Para 1.2 Line 2	<del>They</del> <b>There</b> may be a transition period between the permanent shutdown and <b>when</b> authorization to begin decommissioning actions is granted.	Editorial	<b>X</b>			
4	Page 1 Para 1.3, Line 1	Revise text to read: “An approved decommissioning plan, post- shutdown activity report (PSDAR), and/or approved license termination plan (LTP) typically describe the procedures, processes, and work to be undertaken during decommissioning.	The paragraph, as drafted, implies that procedures are actions, and does not make any connection to the decommissioning plan. It also disregards decommissioning activities described under the PSDAR and the LTP associated with power reactors decommissioning.			<b>X</b>	PSDARs and LTPs are specific documents of the USA licensing process. This document reflects



							consensus practices in the Member States.
5	Page 1 Para 1.4	The current DS450 draft document (e.g.; GSR Part 6) introduces a new definition for “facility” which differs from the IAEA Safety Glossary. We suggest that GSR-6 incorporate a new separate Section to identify new and/or revised definitions unique to GSR-6, as was done for GSR-3.	New and revised definitions of terms when introduced in a Safety Requirements document need to be separately identified in a standalone Section and subsequently included in the updated IAEA Safety Glossary. The separate definition Section helps to highlight the specific and unique usage of the term(s).			X	The Secretariat typically does not include a glossary into the safety standards unless terms are included which would be applicable to the entire suite of safety standards.
6	Page 1 Para 1.5	Revise text to read:  Decommissioning planning and implementation are based on an optimized approach to achieve a progressive and systematic reduction in radiological hazards. Decontamination and remedial actions are carried out based on risk/dose assessment and use of ALARA concept to ensure the safety of workers, the public, and the environment, both during and after decommissioning.	Revision suggested to improve clarity, and to reinforce the relationship of the decommissioning with the risk/dose aspects and the ALARA concept.			X	IAEA documents refer to “optimization” rather than ALARA. This point is adequately covered already.
7	Page 1 Para 1.7	We suggest moving Para 1.7 a new Section on definitions.	Clarity, completeness, and definition. Para 1.7 introduces a new term, “termination” and its associated definition. The term, termination, is not defined in the IAEA Safety Glossary. Note the term, “termination of authorization” is used throughout GSR-6 and perhaps this should be the newly defined term.			X	See comment #5 above.

8	Page 1 Para 1.8	Revise first two sentences to read:  “Planning for future decommissioning is to begin at the facility design stage, to incorporate background conditions, initial assessment of radiological conditions, and identify design features and information to facilitate future decommissioning.”	Revision to clarify the time relationship between initial planning, and later stages when more detailed planning will begin after cessation of operation.	<b>X</b>	See Comment #2 above.		
9	Page 2 Para 1.8	Consider revisions to divide material into smaller logical blocks or into 2-3 paragraphs. We suggest that focus should be on decommissioning strategies as outlined in the 2 <sup>nd</sup> half of the paragraphs.	Edit & Presentation Style The paragraph is very extensive, and covers the entire time frame of a facility. The logic and presentation would be improved by dividing the paragraph into several logical units, each with their own paragraph. For example, the second half of the paragraph is about decommissioning strategies.	<b>X</b>	A new paragraph will begin at: “Strategies being implemented or considered by Member States...”		
10	Page 2 Para 1.8, Bullet #1, Line 4	<i>Immediate dismantling ...</i> This strategy implies prompt completion of decommissioning actions and involves the removal of radioactive material from the facility <del>and its processing for either storage or disposal.</del>	The deleted text is too restrictive on the future possible use or disposition of the radioactive material removed from a facility undergoing decommissioning. See also Para 8.10.	<b>X</b>	Paragraph 1.8 will be revised to: “This strategy implies promptly conducting decommissioning actions and involves the processing of radioactive material for either storage or disposal.”		

11	Page 2 Para 1.10 Bullet #3	Entombment is not <b>typically</b> considered to be a justifiable option for normal planned shutdown. <b>However</b> , it could <del>only</del> be considered under exceptional circumstances for existing facilities. <b>For planning purposes, it may be useful, to consider, at least conceptually, the consequences of a severe accident from the perspective of forced entombment of a portion of a facility.</b>	<p>The following statements indicate that for the most part entombment planning is reactive. It generally occurs after a sudden and unanticipated event, such as a severe accident, forces the government, operator or regulator into rethinking its existing decommissioning plan.</p> <ul style="list-style-type: none"> <li>• Section 1.10 provides in part that entombment could only be considered under exceptional circumstances for existing facilities.</li> <li>• Section 1.15 provides in part that most of the safety requirements in GSR Part 6 [hypothetically] can also be applied to decommissioning after an accident or event that resulted in serious damage to or contamination of a building.</li> <li>• Section 5.4 provides that if there is a sudden shutdown of a facility (e.g., a severe accident), then the decommissioning strategy should be reviewed to determine whether the strategy should be revised.</li> <li>• Section 7.6 provides in part that if an accident or event occurs, then the initial decommissioning plan is updated as soon as possible and reviewed.</li> <li>• However, Section 7.16 <i>does</i> provide that if entombment is chosen in advance, then it will be addressed in the final decommissioning plan.</li> </ul> <p>There appears to be limited thought given to the sequence of events that might give rise to the need for entombment, and no plan on how entombment might be carried out should it become necessary. At least in a broad conceptual sense, it may be useful early on to scope out possible contingencies and level of effort and resources that might be needed to implement entombment of part of a facility after an</p>			<b>X</b>	The safety guides will provide guidance on entombment. This strategy is presently under consideration with the IAEA.
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			accident or intentional act. By waiting until an event occurs to force action, certain alternatives might be precluded or time and manpower inefficiently committed.				
12	Page 2 Para 1.11	<del>IAEA Safety Requirements publications establish international consensus requirements that apply the fundamental safety objective and fundamental safety principles established in the Safety Fundamentals [1]</del>	Redundancy. Delete Para 1.11. The text in Para 1.11 restates the same message included in “The IAEA Safety Standards” section that will be inserted in the front of GSR-6 as done for other Safety Requirements documents.			X	While the IAEA discusses the Safety Fundamentals in the generic text of its documents, the IAEA has included a reference to the Safety Fundamentals, the basis of the safety standards, in Chapter 1 of several safety requirements documents including GSR Parts 1, 3, 4 and 5.
13	Page 3 Para 1.12	<del>The terms used in this publication have the meanings ascribed to them in the IAEA Safety Glossary, 2007 Edition [2], where applicable.</del>	Delete Para 1.12 and include a new “Definitions” section on GSR-6 (see also comment #6)			X	See comment #5 above.
14	Page 3 Para 1.13	Modify Para 1.13 to read: This Publication superseded IAEA Safety	Completeness.	X			

		Series No. WS-R-5 [Ref. 3].					
15	Page 3 Para 1.15	Most of the provisions contained in this safety standard can also be applied to decommissioning after an accident or event that has resulted in serious damage to or the contamination of a building, <b>land or equipment</b> , or simply after a premature shutdown.	Clarity & Completeness. The decommissioning provisions could also be applied to the cleanup of contamination of land or equipment after an accident or event. The use of the newly defined term “facility” may be appropriate to use instead of “building, land or equipment.”	<b>X</b>	Paragraph 1.15 will be revised to: “Most of the provisions contained in this safety standard can also be applied to decommissioning after an accident or event that has resulted in serious damage to or the contamination of a facility, or simply after a premature shutdown.”		
16	Page 3 Para 1.15	Revise first sentence to read:  This publication establishes the safety requirements for all aspects related to decommissioning from the initial engineering and information developed during the siting and design of the facility to the termination of the regulatory authorization upon completion of the remediation work.	Revision to clarify that initial stages are related to information and design features for future decommissioning, and the progression through time to the completion of the remedial actions.			<b>X</b>	Paragraph 1.8 will be revised to incorporate this clarification. The scope, as written, is consistent with paragraph 1.2.
17	Page 3, Scope	We suggest adding a paragraph after Para 1.15 to address inclusion of physical protection (security) to decommissioning	Importance of physical protection of facilities and materials during decommissioning and synergies between safety and security controls during the			<b>X</b>	Currently, the Secretariat

		<p>facilities, materials, and waste generated. The new paragraphs is to ensure that physical protection is included but that operators are directed to IAEA physical protection guidance.</p> <p>The suggested Paragraph is give below:  “Security of radiological sources, new fuel, spent fuel and waste generated during operations must be maintained until it is transferred to an authorized recipient or disposed at an approved disposal facility. The requirements for the security of nuclear and radiological material are established in other IAEA publications.”</p>	decommissioning process.				is considering standards related to physical protection. Once these documents are developed, this document, among others, will be revised.
18	Page 3, Para 1.15 & Para 1.17	Consider moving the second sentence of paragraph 1.15 to the line 9 of Para 1.17, with a “however” clause. They appear in conflict otherwise.	.	<b>X</b>			
19	Page 3 Para 1.16 Line 4	After NORM insert “processing”	Completeness/Language	<b>X</b>			
20	Page Numbering	After page 4 of the document, the next page number started with #2. It should be #5 and the numbering sequence should follow in a correct fashion.	Page numbering/Editorial	<b>X</b>			
21	Para 2.2	Consider revision. The document needs to reconcile differences between planned decommissioning activities and decommissioning after accidents or events.	<p>Clarity &amp; Consistency</p> <p>The paragraph seems to be incoherent. One aspect is that the planning for decommissioning, and development of the decommissioning plan is to include consideration of the possibility of accidents and events, and include steps to prevent and mitigate such events. The second, separate aspect to consider, is that if an event occurs, there may need to be changes to the plan, and there may need to be actions for remediation which are covered by other documents in the Safety Standard Series.</p>			<b>X</b>	The paragraph is specific to conducting decommissioning actions and what happens if an event or accident occurs

							during decommissioning.
22	Req. 1	<p>Revise requirement to read:</p> <p>Decommissioning shall be considered as part of the authorized planned activities; therefore exposures shall be considered as authorized planned exposure situation. The requirements of the Basic Safety Standards (BSS) for planned exposure situations shall be enforced.</p>	<p>Clarification and Language:</p> <p>Revised in an attempt to clarify the two different points in this requirement. First, decommissioning is an ongoing part of an authorized planned exposure situation.. Second, the BSS applies, and more specifically the BSS requirements for planned exposure situations shall be applied.</p>	X	<p>Requirement 1 will be revised to:</p> <p>“Exposures during decommissioning shall be considered as an authorized planned exposure situation and the requirements of the Basic Safety Standards (BSS) for planned exposure situations shall be enforced.”</p>		
23	Para 2.3 & 2.4	<p>Provide “Reference [5]” for Para 2.4.</p>	<p>Consistency &amp; Clarification</p> <p>These paragraphs were selected from the BSS for emphasis. While important, it is not obvious why Reference [5] is included for one and not the other.</p>	X			
24	Req. 4	<p>Consider revision to read:</p> <p>The government shall establish and maintain a governmental, legal and regulatory framework within which decommissioning, including management of resulting radioactive waste, can be planned and carried out safely. <del>This</del> The framework shall include a clear allocation of responsibilities, provision of independent regulatory functions and requirements for funding mechanisms for</p>	<p>Revision to clarify that the “This” in the second sentence is the established framework, and to elaborate on the term “regulated” to clarify that the intent is regarding regulatory authorization and oversight.</p>	X			

		decommissioning. All aspects of decommissioning shall be <b>subject to regulatory authorization and oversight</b> <del>regulated</del> from the siting and design of a facility to termination of authorization.					
25	Para 3.3	<p>Insert a new bullet:</p> <ul style="list-style-type: none"> <li>• <b>Establishing requirements for operator financial assurance for funding of decommissioning and a mechanism to ensure adequate resources will be available when needed for safe and timely decommissioning.</b></li> </ul>	<p>Although Section 3 of GSR Part 6 addresses responsibilities of the government, regulator and facility operator for funding of decommissioning, there appear to be gaps in other sections to carry out these responsibilities on the part of the regulator.</p> <ul style="list-style-type: none"> <li>• Section 3, Requirement 6, provides in part that the operator is required to provide financial assurances and resources to cover the costs associated with safe decommissioning.</li> <li>• Section 6 (Funding), Requirement 9, provides that national legislation shall set out the responsibilities with respect to financial provisions for decommissioning, including establishing a mechanism to provide and ensure adequate resources for safe and timely decommissioning.</li> <li>• However, although Requirement 4 broadly addresses responsibilities of the government, including the provision for independent regulatory functions and requirements for funding mechanisms for decommissioning, Requirement 5, Responsibilities of the Regulatory Body, does not address any specific regulatory responsibility regarding the national legislation mentioned in Requirement 9 to ensure that there will be adequate resources when needed. Requirement 5, which focuses exclusively on the responsibilities of the regulator, does not address decommissioning funding, but instead tends to focus the role of the regulator on technical issues related to safety.</li> </ul>	<b>X</b>	Paragraph 3.3 will be revised to: “Establishing requirements for financial assurance for the funding of decommissioning and a mechanism to ensure adequate resources will be available when needed for safe and timely decommissioning”.		



			Thus, there appears to be no stated regulatory oversight of decommissioning funding.				
26	Para 3.4, 1 <sup>st</sup> bullet	<input type="checkbox"/> - selecting a decommissioning strategy as the basis for preparing <b>and maintaining</b> decommissioning plans (initial and final) throughout the lifecycle of the facility;	The operator should maintain and update the decommissioning plan throughout the lifecycle of the facility to reflect changes to the facility or other conditions. This change is consistent with Requirement 10.	<b>X</b>			
27	Para 3.4, 7 <sup>th</sup> bullet	- <input type="checkbox"/> preparing and implementing appropriate safety and physical protection procedures, including emergency preparedness, <del>and</del> <b>applying good engineering practices;</b>	Delete the requirement for “good engineering practices” or provide further clarification of the requirement.	<b>X</b>			
28	Para 6.1	Adequate financial resources to cover the costs associated with safe decommissioning, including the management of the resulting waste, needs to be available when needed, even in the event of premature shutdown of the facility <b>(e.g., as a consequence of a severe accident).</b>	On other funding issues, Section 6.1 provides that there must be adequate financial resources to cover decommissioning costs, even in the event of premature shutdown of the facility, which could include forced entombment resulting from severe damage due to an accident or intentional act.	<b>X</b>			
29	Para 6.2	The cost estimate is updated based on the periodic update of the initial decommissioning plan. The financial assurance instrument is maintained consistent with the facility’s specific cost estimate and is changed if the cost estimate increases <del>or</del> <b>decreases.</b>	Why <u>must</u> the financial instrument be changed if the cost estimate decreases? Should the operator have the option to retain the existing financial instrument in cases when the cost estimate decreases.	<b>X</b>	Paragraph 6.2 will be revised to: “The financial assurance instrument is maintained consistent with the facility’s specific cost estimate and is changed, if appropriate”		
30	Para 6.4	If the decommissioned facility is released with restrictions on its future use, financial assurance ensures that funding covers the facility and its monitoring, surveillance and control through the necessary time period for long term stewardship.	No change to text, but this is the only place where the term “long term stewardship” is used. There is no definition of long term stewardship and no clear role of the regulator or the operator’s role in planning and funding for long term stewardship.	<b>X</b>	Paragraph 6.4 will be revised to delete “long term stewardship.”		
31	Req. 10	Consider Revision	The requirement is to prepare and maintain a	<b>X</b>	We agree		

			decommissioning plan. However, as defined elsewhere, the plan has all the details of the selected strategy and activities. Much of this will not be available during the operations of the facility. It would seem to be more appropriate for the operator to prepare and maintain the information necessary to effectively accomplish decommissioning. Note that the information in para 7.1 reflects this information.		with the reason for the comment. However, as noted in paragraph 2.5, the graded approach should be used in the preparation of the decommissioning plan. Therefore, it is expected that an initial plan would not have all the information which would be included in the final decommissioning plan.		
32	Para 7.7 Line 2	Insert: In addition, environmental monitoring data from operational period should be retained	Completeness to ensure environmental monitoring data from operation are retained.			<b>X</b>	The safety guides will provide details on recordkeeping.
33	Para 7.13 Line 3	Insert at the end of Para 7.3: “and meet with regulatory approval”	Completeness to ensure compliance with regulatory requirements and protocols.			<b>X</b>	The final decommissioning plan or updates would need to meet with regulatory approval as

							noted in paragraph 3.3. Therefore, it is not necessary to add this phrase.
34	7.17 Line 3	Last sentence, modify to read: The adequacy of the long-term monitoring and controls shall be periodically reviewed in order to ensure that the entombment structure maintains its integrity and original purposes.	Completeness to enforce r long-term monitoring aspects.	<b>X</b>			
35	Req. 15	Consider revision to read:  On completion of decommissioning actions, <del>the operator shall demonstrate it shall be demonstrated</del> that the end state criteria as defined in the final decommissioning plan and any additional regulatory requirements have been met. <del>When the operator has demonstrated that the end state has been met, the</del> The regulatory body shall <b>verify the end state criteria and</b> decide on termination of the authorization.	Clarity. The paragraph, as originally drafted did not specify the operator as the responsible party to demonstrate the end state, and did not specify that the regulatory body needed to verify the criteria as part of the decision process for determining if the authorization can be terminated.	<b>X</b>			
36	Para 8.8	Prior to starting decommissioning, the operator ensures the availability of, to the extent possible, adequate waste processing, storage, <b>transport package(s)</b> , and disposal capacity for the wastes resulting from the decommissioning.	The operator must assure the availability of transport packages to ship the waste offsite.	<b>X</b>	Paragraph 8.8 will be revised to: “Prior to starting decommissioning, the operator ensures the availability of adequate waste processing, storage, and transport		

					package(s) for the wastes resulting from the decommissio ning.		
37	Para 9.2 & 9.5	Combining the two paragraphs that address the regulator's action "once the operator has demonstrated that the end state in the approved decommissioning plan" has been achieved.	Combine the two paragraphs to address the regulator's action once the operator has demonstrated that end state in the approved decommissioning plan has been reached. In the case of future unrestricted use of the facility/site, the regulator may terminate the authorization. In the case of future restricted use of the facility/site, the regulator may take regulatory action other than termination as described in Para 9.4.	<b>X</b>	Paragraph 9.5 will be relocated directly after paragraph 9.2.		