

**Draft Safety Guide DS452 “Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities”
(Version dated 28 August 2015)**

Status: STEP 11 – Second review of the draft safety standard by the SSCs

Note: [Blue parts](#) are those to be added in the text. [Red parts](#) are those to be deleted in the text.

COMMENTS BY REVIEWER					RESOLUTION			
Reviewer: Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) (with comments of GRS) Country/Organization: Germany					Page 1 of 8 Date: 2015-10-12			
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	1 st sentence: “With the maturing of the nuclear industry in the past decades, many Member States have constructed and commissioned facilities that use nuclear and radioactive material or radioactive sources in a variety of applications.”	Ensuring consistency with the definition of the related term in the IAEA Safety Glossary (2007 Edition).	X			
3	2	1.7	2 nd sentence: “With the increasing expansion of the nuclear industry worldwide and with many nuclear facilities nearing the end of their operating life times , experience has shown the importance of considering planning aspects of decommissioning for new facilities during their siting, design and construction.”	Wording. The phrase “increasing expansion” is a tautology. One could ask whether a decreasing expansion could also occur.	X			
2	3	1.17	2 nd sentence: “It is developed primarily for facilities with a normal operational history (i.e., without a severe accident), which was followed by a planned permanent shutdown.”	The term ‘permanent shutdown’, as used in this Safety Guide, means that the facility has ceased operations and operation will not be recommenced (see footnote No. 2 to Para 1.1).	X			

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

2	4	1.18	<p>3rd and 4th sentence: “If removal of operational waste and spent fuel is not possible prior to decommissioning, it should be reflected in the final decommissioning plan and should be performed under the licence for decommissioning or under a separate operating licence for processing or storage of operational waste and spent fuel. Other IAEA publications address these aspects [10–13, 39].”</p> <p>Please add the Safety Guide WS-G-6.1 to the list of references: “[39] INTERNATIONAL ATOMIC ENERGY AGENCY, Storage of Radioactive Waste, IAEA Safety Standards Series No. WS-G-6.1, IAEA, Vienna (2006).”</p>	<p>Amendment for the sake of completeness. Both the IAEA Safety Guides WS-G-2.5 [12] and WS-G-2.6 [13] are focused on processing (i.e. pretreatment, treatment and conditioning) of radioactive waste. Specific guidance on storage of radioactive waste is provided in the Safety Guide WS-G-6.1. A reference [39] to this publication should be added here.</p>	X			
3	5	1.21	<p>2nd sentence: “While this Safety Guide covers facilities associated with processing and storage of radioactive waste, it does not address disposal of radioactive waste and closure of waste repositories disposal facilities.”</p>	<p>Although defined in the IAEA Safety Glossary (2007 Edition), the term ‘repository’ is meanwhile considered as outdated and should be replaced by ‘disposal facility’. The Safety Requirements SSR-5 and all associated Safety Guides (GSG-1, SSG-14, SSG-23, SSG-29 and SSG-31) solely refer to disposal facilities.</p>	X			
2	6	2.8	<p>Last sentence: “Specific provisions required by the regulatory body based on the environmental impact assessment should be monitored overseen to ensure their implementation by the licensee, depending on the end state described in the final decom-</p>	<p>Clarification. It is more appropriate to say provisions required by the regulatory body should be overseen rather than they should be</p>	X			

			missioning plan.”	monitored to ensure their implementation by the licensee.				
2	7	2.15	“According to the complexity of decommissioning actions and the duration of the decommissioning project, the final decommissioning plan may be supported by a single overall safety assessment for the entire project, or by a summary <u>summarized</u> safety assessment, which covers the entire project and provides input and links to <u>a set of</u> more detailed safety assessments that may be developed <u>separately</u> for each decommissioning phase or work package, <u>with due account taken of the interdependences between the different phases</u> .”	Clarification. If safety assessments are developed separately for each decommissioning phase, account should be taken of the interdependences among the different phases.	X			
2	8	4.14	Penultimate bullet: “ <u>Predisposal</u> W waste management (i.e. processing, packaging, storage and transportation; etc.);”	The predisposal management of radioactive waste covers processing (i.e. pretreatment, treatment and conditioning), storage and transport (see Para 1.2 of the Safety Requirements GSR Part 5). According to the IAEA Safety Glossary (2007 Edition), packaging is part of conditioning operations.	X			
2	9	5.9	2 nd sentence: “Updates of the final decommissioning plan ... during conduct of decommissioning should reflect the progress of the work, the continuous <u>management and</u> removal of the generated waste and the evolution of radiological and physical status of the facility.”	An update of the final decommissioning plan should reflect not only the continuous removal of the generated waste, but also the progress in its predisposal manage-	X			

				ment, taking into account the interdependencies among the various steps in the management of radioactive waste from its generation up to disposal (see Requirement 6 of GSR Part 5).				
2	10	6.9	2 nd sentence: “The occurrence of an incident (such as a spill, leaks or leakage) or accident should also prompt the updating of the cost estimate.”	More appropriate wording. The sentence mentions typical examples of incidents.		X		Please see the revised text, which accommodates comments from Japan and ENISS.
1	11	Section 7	It remains unclear for which reason the Paras 7.29 and 7.39 in the previous version of DS452 (dated 3 December 2014) have been deleted in the present version. According to the resolution table of Member States comments, there was no request from a State to do so. Both paragraphs illustrated exemplary how to manage a complex decommissioning project based on an immediate dismantling strategy (Para 7.29) or a deferred dismantling strategy (Para 7.39), respectively, by adopting a phased approach. Experiences in several Member States reveal that such a multi-phase approach is common practice. The corresponding guidance in former Paras 7.29 and 7.39 is considered useful especially for those States having to decommission a nuclear installation in the near future, without experience feedback being available nationally from the conduct of similar decommissioning projects in the past.	Justification for removal of both paragraphs from the Safety Guide is required.	X	These examples were deleted during the in-house review of the draft after addressing MS comments, on the basis of the recommendation from several decommissioning experts. These experts strongly disagreed with the “phased approach” and its inclusion in the Safety Standards, no matter it is a recognized practice in several Member States. Their concern was that the “phased approach” does not provide for a proper “up front” planning and cost estimate for the entire project, and that such approach leads to delays and cost overruns. In addition, they pointed out that the examples in 7.29 and 7.39 include activities which are typically not part of decommissioning (Phases 1 and 2 for 7.29, and Phase 1 for 7.30). The examples have been removed, as consensus was not achieved about their adequacy to be included in the Standards.		
3	12	7.6 (b)	“Facilitate access to structures, systems and components SSCs , including compartmentalization of processes (incorporate hatches, large	The abbreviation ‘SSCs’ has been introduced in Para 1.3.	X			

Relevance: [1 – Essentials](#) [2 – Clarification](#) [3 – Wording/Editorial](#)

			doors);”					
3	13	7.6 (d)	“Use modular construction in order to facilitate the dismantling of structures, systems, equipment and components <u>SSCs</u> ,”	The abbreviation ‘SSCs’ has been introduced in Para 1.3.	X			
3	14	7.14 (a), last bullet	“Records of the history of the facility, including: ... • Waste storage <u>and/or</u> disposal locations.”	More general wording. Some decommissioning projects could require both waste storage and disposal locations.	X			
3	15	7.28	3 rd sentence: “Existing storage <u>areas for</u> of liquid radioactive waste are also of importance for decommissioning, as removal and processing <u>of this type of waste</u> may require considering also the physical and chemical status, as well as the design life of related storage tanks.”	To improve wording.	X			
2	16	7.33	1 st sentence: “In some decommissioning projects it may be advantageous to remove large components, e.g. steam generators from nuclear power plants, as a whole for storage and processing outside the facility’s building or to ship them to another facility away from the site for further segmentation, and treatment <u>and conditioning</u> .”	Amendment for the sake of completeness. Conditioning is a separate step in predisposal waste management. According to the IAEA Safety Glossary (2007 Edition), conditioning includes immobilization, packaging and, if necessary, provision of an overpack.	X			
3	17	8.2, last bullet	“Modifications of the existing infrastructure of the facility may be needed to facilitate immediate dismantling or, in some cases, to prepare the facility for a safe enclosure period. The main modifications may involve: ... • Establishment of an on-site interim waste storage area.”	Storage is, by definition, an interim measure, but it can last for several decades if a disposal option is not available. Consequently, the term ‘interim storage’ would be appropriate only to	X			

				refer to short term temporary storage when contrasting this with longer term storage. Storage as defined in the IAEA Safety Glossary (2007 Edition) should not be designated as interim storage.				
3	18	8.3	Last sentence: “This allows ... removal of the operational SSCs associated with the hazard (i.e., criticality monitoring <u>detection and alarm systems</u>) or minimizes the potential to cross contaminate redundant equipment.”	Consistency with the terminology used in the Safety Requirements NS-R-5 (Rev. 1) “Safety of Nuclear Fuel Cycle Facilities” and in the Safety Guide SSG-27 “Criticality Safety in the Handling of Fissile Material”.	X			
3	19	8.11	Last sentence: “Examples of this include liquid storage tanks <u>for liquid radioactive waste</u> and remote handling systems within unmanned cells.”	To improve wording.	X			
2	20	8.12	“Decommissioning of a facility may be aided in certain instances by partial or total decontamination of the components , equipment and <u>SSCs structures</u> to be dismantled. Decontamination may be applied to internal or external surfaces and covers a broad range of actions directed at the removal or reduction of radioactive contamination in or on components , equipment and <u>SSCs structures</u> of the facility. ... Before any decontamination technique is selected, an evaluation of its effectiveness, of the potential for reducing total exposure and of the benefit in terms of generation of waste and effluents	1 st and 2 nd sentence: The abbreviation ‘SSCs’ has been introduced in Para 1.3. 4 th sentence: Please insert a comma after ‘effectiveness’ to avoid the misleading phrase “effectiveness of the potential for reducing total exposure”. See also the resolution	X			

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

			should be performed. The decontamination process should also be evaluated to ensure it is compatible with waste processing systems as well as storage and/or disposal options. ... ”	table of Member States comments, comment on Para 8.12 provided by France. 5 th sentence: Decisions on the conduct of decontamination actions often have to be made at a time when a disposal facility is not yet available and, thus, the waste acceptance criteria for disposal are unknown. In such cases, the specifications for the decontamination process should comply with the waste acceptance criteria for storage.				
2	21	9.17	“If the decommissioning waste has to be stored on-site for a longer period of time after completion of decommissioning, an application for construction of a new storage facility for radioactive waste is required to be prepared by the licensee and submitted to the regulatory body for review, approval and issuance of a licence. Requirements and guidance concerning radioactive waste storage are provided in [11–13] [11, 39] . If spent fuel remains on-site, guidance found in [10] should be applied. ... ”	Both the IAEA Safety Guides WS-G-2.5 [12] and WS-G-2.6 [13] are focused on processing (i.e. pretreatment, treatment and conditioning) of radioactive waste. Specific guidance on storage of radioactive waste is provided in the Safety Guide WS-G-6.1. A reference [39] to this publication should be added and the existing ones to WS-G-2.5 and WS-G-2.6 should be deleted. See also our		X		DS447 and DS448 also address storage of radioactive waste as a part of the pre-disposal waste management.

Relevance: [1 – Essentials](#) [2 – Clarification](#) [3 – Wording/Editorial](#)

				comment on Para 1.18.				
3	22	Ref. [6]	“INTERNATIONAL ATOMIC ENERGY AGENCY, Release of Sites from Regulatory Control Upon <u>on</u> Termination of Practices, IAEA Safety Standards Series No. WS-G-5.1, IAEA, Vienna (2006).”	Citation of the correct title of the Safety Guide WS-G-5.1.	X			
3	23	Footnote No. 11 to Annex I, Para I-3, Item 12	“ ‘Public’ information on arrangements for physical protection and accounting and control of nuclear material that is included in the de-commissioning plan that does not contain sensitive security information.”	Editorial.	X			