Master Resolution Table

DS518A Safety of Nuclear Fuel Reprocessing Facilities (Revision of SSG-42)– Step 9

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	IND1	Page no. 1 Para 3/line 6 (Section 1.3)	… handled, processed, treated and stored safely, to optimize the levels of exposure of the ~~public and~~ workers and to minimise the levels of exposure of the public,	Optimization is carried out for workers by various protective measures, whereas, for public, exposure can be minimized			X	Consistent with SSR-4 (Para 2.7) and SF-1.
2.	GER1	1.4	This Safety Guide supersedes IAEA Safety Standards Series No. 42, Safety of Nuclear Fuel Reprocessing Facilities. Terms used in this Safety Guide are to be understood as defined and explained in the IAEA Nuclear Safety and Security Glossary and in chapter "Definitions" in SSR-4.	Please add that terms are according to IAEA Glossary and Definitions from SSR-4.			X	Relevant statement regarding the terms is included as standard text in all IAEA Safety Standards in a section prefacing the publication.
3.	GER2	1.7	The safety requirements applicable to nuclear fuel cycle facilities (i.e. facilities for uranium ore refining, conversion, enrichment, reconversion, storage of fissile material, fabrication of fuel including mixed oxide fuel, storage and reprocessing of spent fuel,	We think it is useful to install connection with the Safety Guide "Safety of Nuclear Fuel Cycle Research and Development Facilities".			X	There are other several safety guides related to NFCFs including fuel fabrication, enrichment, reprocessing facilities, it is not appropriate to list only DS518B or all of the other ones.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			associated conditioning and storage of waste, and facilities for the fuel cycle related research and development) are established in SSR-4 [1]. This Safety Guide provides recommendations on meeting these requirements for reprocessing facilities. Specific recommendations on the safety of nuclear fuel cycle research and development (R&D) facilities are provided in Safety Guide DS518B. Recommendation on planning for decommissioning of uranium production facilities are provided in DS551.	Additionally, reference to a new Safety Guide DS551 "Decommissioning of Uranium Production Facilities" might be useful to give the reader the complect picture of IAEA set of rules.				
4.	JAP1	1.9.(c)	This Safety Guide deals specifically with the following processes: (a) The handling and short term temporary storage of spent fuel; (b) The dismantling, shearing[3] or decladding[4] and dissolution of spent fuel; (c) The separation of uranium and plutonium from fission products and other ~~trans-plutonium~~ trans-uranium actinides; (d) The separation and purification of uranium and plutonium;	"trans-uranium" is more appropriate than "trans-plutonium" since neptunium should be extracted in the Nuclear Fuel Reprocessing. (Atomic number of neptunium is 93, plutonium 94, and uranium 92)		X (c) The separation of uranium and plutonium from fission products and other transuranic actinides;		'transuranic' is the formal term used.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			(e) The production and storage of plutonium and uranium oxides and uranyl nitrate to be used as a feed material to form 'fresh' uranium or mixed (UO2/PuO2) oxide fuel rods and assemblies; (f) The treatment and handling of the various waste streams.					
5.	GER3	1.16	Annex I shows the typical main process routes for a reprocessing facility. Annex II provides examples of structures, systems and components (SSCs) important to safety in reprocessing facilities, grouped in accordance with the processes identified in Annex I.	Please introduce abbreviation of SSCs, as this term is being used very often in the current document.	X			
6.	FRA1	2.1	In a fuel reprocessing facility, large amounts of fissile material, radioactive material and other hazardous materials are present, often in dispersible forms (e.g. solutions, powders and gases) and sometimes subjected to vigorous chemical and physical reactions. Reprocessing facilities have the potential for serious accidents that could result in a nuclear or radiological emergency. In reprocessing facilities the main hazards are potential nuclear criticality, loss of confinement and radiation exposure (both internal	The graduated approach is no longer presented at the beginning of the document, although it remains a principle applicable to the different parts of the plant. Indeed, the risks and the measures taken must be adapted according to the processes, functions and the nature, forms and quantities of the hazardous materials.			X	NS-R-5 (Rev.1) is obsolete, and superseded by SSR-4 The intent of the suggestion is covered in the paragraph 3.3 of this document, which addresses the use of a graded approach based on the potential hazards, complexity, and importance to safety of each item and process.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			exposure and external exposure), fire, chemical and explosive hazards. A graded approach that is proportionate to the potential hazards associated with the different parts of reprocessing facilities should be used when applying the requirements established in section 1 of NS-R-5 (Rev. 1) and in Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GSR Part 7 [11].					
7.	GER4	2.1 Line 4	… In reprocessing facilities the main hazards are potential nuclear criticality, loss of confinement and radiation exposure (both internal exposure and external exposure), fire, floods, chemical and explosive hazards.	Clarification		X In reprocessing facilities, the main hazards are potential criticality, loss of confinement, radiation exposure (both internal exposure and external exposure), fire, floods, loss of cooling, chemical hazards and explosive hazards		See also CHN1
8.	CHN1	2.1	In reprocessing facilities the main hazards are……fire, loss of cooling and explosive hazards.	High level liquid waste will generate a lot of decay heat, loss of cooling will		X In reprocessing facilities, the main		See also GER4

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				cause solution boiling, even evaporation and explosion.		hazards are potential criticality, loss of confinement, radiation exposure (both internal exposure and external exposure), fire, floods, loss of cooling, chemical hazards and explosive hazards.		
9.	GER5	2.2	In normal operation, reprocessing facilities generate significant volumes of gaseous and liquid effluents with a variety of radioactive and chemical constituents. The facility's processes and equipment are required to be designed and operated to comply with authorized limits and to minimize the impact of these effluents on the public and the environment as low as reasonably achievable: see para. 6.100 of SSR-4 [1].	Para. 6.100 is part of Requirement 25 of SSR-4. Please put in line with the SSR-4 text concerning the authorized limits.	X			
10.	GER6	2.4	When periodic safety reviews are being performed, the records of previous discharges should be examined thoroughly to confirm that the existing engineered provisions and operational	Issue is not exactly clear. We suggest a rewording, hopefully it suits.		X In addition, developments in processes and in technology for the		Potential improvement in optimization of protection and safety, is already mentioned in the first sentence of the same para.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			practices are such that protection and safety is optimized. In addition, modern developments in processes and in technology for the reduction and treatment of effluents should be examined for potential improvements of the existing facility's engineered provisions and operational practices.			reduction and treatment of effluents should be examined to determine if improvements might be made to the facility.		
11.	RUS1	2.5 (b)	It is proposed to clarify enumeration in brackets: filters, contamination of personnel, destruction of barriers, or to exclude it.	It is not clear what the enumeration in the brackets means in this context.	X			
12.	FRA2	2.5	(e) the high complexity of the processes, which might lead to ~~unpredictable~~ changes in facility safety during or after modification of equipment	The aim of the analysis is to predict changes as best as possible and to study them by defining situations that encompass the risks associated with the different possible states, predicted or not predicted.	X			
13.	JAP2	2.5.	In reprocessing facilities, actinides and fission products in different chemical and aggregate forms are processed. The factors affecting the safety of a reprocessing facility include the following: (a) The wide range and nature of radioactive inventories present at such	To clarify the filters. The "filters" is not equivalent expression to the subsequent items, "contamination of personnel" and "destruction of barriers".		X Text in brackets is removed.		See RUS1

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			facilities. (b) The wide range and nature and quantities of process chemicals used in different forms with a potential for release through the barriers (e.g. passing through filters, contamination of personnel, destruction of barriers) and their chemical reactions including radiation–chemical reactions. ……	Since we think that it means passing through the filter of radioactive substances here.				
14.	GER7	2.7	In the design of a reprocessing facility, well-proven process technologies and engineering knowledge are required to be used: see Requirement 12 of SSR-4 [1]. Engineering solutions adopted to ensure the safety of the reprocessing facility are required be of high quality, proven by previous experience or, ~~in accordance with a graded approach,~~ by rigorous testing, research and development, and experience of operating prototypes: see paras 6.31–6.35 of SSR-4 [1]. This strategy should also be applied in the design for all the stages of the lifetime of the reprocessing facility, including development and design of equipment, in construction of the facility, in	Para. 6.33 of SSR-4 states that "In the absence of such codes and standards, the results of experience, tests, analysis or a combination of these shall be applied. The use of a results based approach shall be justified"; there is no connection with graded approach. General remark that any stage of the lifetime of a facility should be concerned might be important here.		X Engineering solutions adopted to ensure the safety of the reprocessing facility are required be of high quality, proven by previous operating experience or by adequate testing, research and development, and experience of operating prototypes (see paras 6.31–6.35 of SSR-4 [1]). This		Clarity and consistency with SSR-4

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			operation, in carrying out modifications and in preparation for the decommissioning of the reprocessing facility, including any upgrades or modernization.			strategy should be applied in all stages of the lifetime of the reprocessing facility, including the design, construction, operation (including when conducting modifications, upgrades or modernization) and preparation for the decommissioning of the facility..		
15.	RUS2	2.7	Engineering solutions adopted to ensure the safety of the reprocessing facility are required be of high quality, proven by previous experience or, ~~in accordance with a graded approach,~~ by **adequate** ~~rigorous~~ testing, research and development, and experience of operating prototypes: see paras 6.31-6.35 of SSR-4 [1].	According to para 6.33 of SSR-4, 'in the absence of such codes and standards, the results of experience, tests, analysis or a combination of these shall be applied'.	X			
16.	GER8	2.8	Owing to the anticipated long lifetime of industrial scale reprocessing facilities and in accordance with the specific mechanical, thermal, chemical,	Editorial	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			nuclear and radiation conditions of the processes in use, particular consideration is required to be given to the potential for ageing (and thus degradation) of ~~structures, systems and components~~ SSCs important to safety: see Requirement 32 of SSR-4 [1]. This should also include the impacts of obsolescence, especially for those components judged difficult or impracticable to replace. In selecting and designing ~~structures, systems and components~~ SSCs important to safety, the processes that could cause the degradation of structural materials are required to be taken into account: see para. 6.36 of SSR-4 [1].					
17.	FRA3	2.8	Programmes are required to be developed and implemented to detect […]	Ed.	X			
18.	GER9	2.9 Line 5	… Inspection and testing should be performed against unambiguous, established performance standards and objectives ~~expectations~~ .	Please clarify what is to understand under expectations here. Our suggestion - "performance standards and objectives". Alternative — "expectation of management".	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
19.	GER10	2.10	A combination of passive design features and active design features is preferable ~~more reliable~~ than administrative controls (see para. 6.68 of SSR-4 [1]) and are therefore preferred in the design of reprocessing facilities Automatic systems should be highly reliable and designed to maintain process parameters within the operational limits and conditions or, following an anticipated operational occurrence or accident conditions, to bring the process to a safe and stable state, which is generally a shutdown state[5]. Footnote 5. A safe shutdown state implies there is no movement of radioactive material or liquids, with ventilation and (essential) cooling only	Para. 6.68 of SSR-4 is about hierarchy of design measures that should be used for protection against potential hazards, we suggest "preferable" instead of "more reliable". More explanation to safe and stable state might be useful: clarification and putting in-line with IAEA Glossary.		X A combination of passive design features and active design features is generally more reliable than administrative controls (see para. 6.68 of SSR-4 [1]) and is therefore preferred in the design of reprocessing facilities. Automatic systems should be highly reliable and designed to maintain process parameters within the operational limits and conditions or to bring the process to a safe and stable state (generally a shutdown state), following an anticipated		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						operational occurrence or accident conditions		
20.	GER11	2.11 Line 4	… Where an operator would need to select an optimum response from a number of possible options, consideration should be given to providing an automatic ~~response~~ safety action and relying on passive design features. These should be designed to limit the consequences for safety in the event that the operator fails to take sufficient or timely action, by providing additional defence in depth.	Clarification	X			
21.	GER12	2.12	In addition to the ~~structures, systems and components~~ SSCs identified as important to safety in the safety analysis and their support systems, instrumentation and control systems used in normal operation are also relevant to the overall safety of the reprocessing facility.	Please clarify the role of support systems here as well.			X	SSCs important to safety covers also support systems.
22.	ISR1	2.12	We suggest to consider mentioning at the end of paragraph 2.12 (where computer hardware and software quality management is pointed out) the subject of computer security. (See also comment No. 6 to paragraph 5.86).	Completeness	X			
23.	GER13	2.13	A reprocessing facility should have	Clarification		X		Precision

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			alarm systems to initiate full or partial facility evacuation in the event of an emergency (e.g. criticality hazard, fire or high radiation levels).			criticality event		
24.	GER14	2.15	~~Utility~~ Facility supply systems and services are necessary to ensure that the safety systems of the reprocessing facility remain operational at all times, and to provide services to SSCs ~~structures, systems and components~~ important to safety.	Clarification		X Support systems are necessary to ensure that the safety systems of the reprocessing facility remain operational at all times, and to provide services to SSCs important to safety.		Clarity
25.	GER15	2.16 Line 6	… The subsequent recovery sequences should be similarly analysed, defined in procedures and executed, when necessary, in a timely manner; for example, the managed recovery or reduction of fissile material in a multi-stage contactor.	Clarification	X			
26.	RUS3	2.16	The ~~situations~~ anticipated operational occurrences that necessitate a shutdown of the reprocessing facility process and putting the facility into a safe and stable state, with no movement or transfer of	The "situations" referred to in the text are operational occurrences that should be analyzed in the course of the safety analysis. It is proposed to		X Revised to "All situations (including anticipated		Clarity – "situations" is used in SSR-4 (para 9.27). See also response to FRA4

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			chemicals and/or fissile material, should be analysed. The actions to be taken in such situations should be well defined in operating procedures, based on the findings of this analysis. These procedures should be executed in accordance with the nature and urgency of the risk involved. Such occurrences might be caused by technical, natural or human induced internal or external events. The subsequent recovery sequences should be similarly analysed, defined and executed. When necessary, in a timely manner.	use here the term "anticipated operational occurrences" that is used in SSR-4. and also to drop the mention of SSCR since it refers to beyond design basis accidents rather than operational occurrences.		operational occurrences and accident conditions) that necessitate a shutdown ……”		
27.	FRA4	2.16	The situations that necessitate a global or partial shutdown of the reprocessing facility process and putting the whole or a part of the facility into a safe and stable state, with no movement or transfer of chemicals and/or fissile material, should be analysed.	Not all units of a facility are necessarily shut down with no transfers.		X All situations (including anticipated operational occurrences and accident conditions) that necessitate a shutdown or partial shutdown of the reprocessing facility or process and putting all or part of the facility		Clarity – “global” shutdown is not defined.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						into a safe and stable state, with no movement or transfer of chemicals and/or fissile material, should be analysed.		
28.	FRA5	2.17	(f) Criticality ~~accident~~ detection and alarm system.	Consistency with terminology of 5.61, 5.62, 5.128, 7.12, and with § 6 of SSG-27 rev 1	X			
29.	CHN2	2.17	For a reprocessing facility ……, the following systems should continue to operate: (d) Safety significant instrumentation ……;	It is mentioned in Paragraph 2.17 of SSG42 published in 2017: To maintain the facility in a safe state, some systems should operate continuously or should be restarted within a defined delay period if they become unavailable. Examples of such systems are: …… (d) Safety significant instrumentation and control systems and utility supply systems.	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				But it is revised in SSG42 of 2023: …… (d) Safety related instrumentation and control systems ……. The descriptions of "safety significant" is more appropriate than "safety related".				
30.	RUS4	2.18	This may include **static and dynamic barriers**, level measurement systems for tanks and vessels, batch transfer accountancy systems to ensure that transfers made between vessels are completed and the installation of systems to detect and recover materials lost from primary containment (e.g. cell sumps and liquid transfer systems) **and other arrangements (see also paras 5.21-5.43).**	The examples given are very specific and do not include measures to confine radioactive material such as barriers and the measures specified in paragraphs 5.21 to 5.43 of the Guidelines. Therefore, it is proposed to specify it.		X This confinement may involve static and dynamic barriers, level measurement systems within tanks and vessels, batch transfer accountancy systems to ensure that transfers made between vessels are completed and systems to detect and recover materials lost from primary containment (e.g. cell sumps and		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						liquid transfer systems) (see also paras 5.23–5.46 of this Safety Guide)		
31.	GER16	3.3 Line 11	… Communications regarding safety and security should ensure that confidentiality of information is maintained. ~~This includes~~ Concerning the system of nuclear material accounting and control, ~~for which~~ its information security should be coordinated in a manner ensuring that subcriticality is not compromised.	Clarification, as wording "this includes" is not clear			X	The intent is to express the need for confidentiality including nuclear material accounting.
32.	RUS5	3.3	This includes the system of nuclear material accounting and control, for which information security should be coordinated in a manner ensuring that subcriticality or other safety and security measures are not compromised.	Subcriticality is one of the safety conditions. Thus, it should be clarified.		X This includes the system of nuclear material accounting and control, for which information security should be coordinated in a manner ensuring that subcriticality and other safety and security measures are not compromised		Clarity
33.	GER17	3.4	In determining how the requirements of	The fact that reprocessing		X		Sentence removed. See

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			the management system for safety of a reprocessing facility are to be applied, a graded approach based on the relative importance to safety of each item or process is required to be used: see Requirement 7 and para. 4.15 of GSR Part 2 [10]. However, it should be pointed out, that considering the significant hazards associated with a reprocessing facility, the potential for applying a graded approach is limited. See also para 5.2 of this Safety Guide.	facility is a high hazard facility should be emphasised additionally.				response to RUS6.
34.	RUS6	3.4	~~However, considering the significant hazards associated with a reprocessing facility, the potential for applying a graded approach is limited.~~	The sentence is inconsistent with para 4.15 (c) and the above mentioned text - there are items or processes of different importance for safety used in reprocessing facility, so, graded approach based on the relative importance to safety of each item or process is required to be used.	X			
35.	GER18	3.9 Line 6	The management system should include ~~arrangements for empowering relevant personnel to stop~~ clearly defined and documented	Call for responsibility			X	Responsibilities are addressed in other paras, proposed revision changes the intent of the original text.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			responsibilities besides productive circles, to allow for stop of unsafe operations at the reprocessing facility once identified.					Consistently with other Guides, the focus of the text is arrangements and authorities to stop unsafe operation.
36.	FRA6	3.11	Audits should be performed also by ~~nuclear~~ criticality safety staff.	Consistency, as "criticality safety" is mentioned without the additional "nuclear" in other part of the document and in SSG-27 rev 1 (its title being "Criticality Safety in the Handling of Fissile Material" and not "Nuclear Criticality Safety […])		X Audits should also be performed by the personnel who performed the criticality safety analyses to confirm that the data used and the implementation of criticality safety measures are correct.		Clarity
37.	ISR16	3.12	b) There is no lines space between paragraphs 3.12 and 3.13	Editorial	X			
38.	GER19	3.14	Requirement 58 of SSR-4 [1] states that "The operating organization shall ensure that all activities that may affect safety are performed by suitably qualified and competent persons." In accordance with paras 9.3~~9~~8–9.47 of SSR-4 [1], the operating organization is required to ensure that these personnel	Please include also, that, according to SSR-4 para 9.38, certain operating positions may require formal authorization or a licence.			X	Repeating the text of 9.38 is not needed as its already referenced.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			receive training and refresher training at suitable intervals, appropriate to their level of responsibility. In particular, personnel involved in activities with fissile material (both uranium and plutonium), radioactive material including waste and with chemicals should understand the nature of the hazard posed by these materials and how the risks are controlled by the established safety measures, operational limits and conditions, and operating procedures. Certain operating positions may require formal authorization or a licence.					
39.	CHN3	3.15	3.15 In accordance with paras 4.33–4.36 of GSR Part 2 [10], the management system for a reprocessing facility is required to include arrangements for procurement.	SSG-42 refers to the original articles or paragraphs from SSR-4 and GSR Part 2 etc. in many places. It is suggested that SSG-42 only states according to the relevant article numbers, and there is no need to refer to the original articles or paragraphs.			X	Style.
40.	GER20	3.16	In accordance with para. 4.16(b) of SSR-4 [1], the operating organization is required to ensure that suppliers of	Only to conduct audits might not be enough. Requirement 11 of GSR			X	The context here is resource management. Audits are specifically mentioned as

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			items and resources important to safety have an effective management system. To meet these requirements, the operating organization should conduct audits of the management systems of the suppliers and should put in place arrangements with vendors, contractors and suppliers for specifying, monitoring and managing the supply to it of items, products and services that may influence safety.	Part 2 states that "The organization shall put in place arrangements with vendors, contractors and suppliers for specifying, monitoring and managing the supply to it of items, products and services that may influence safety."				their conduct needs resources management.
41.	FRA7	3.22	The audits performed by the operating organization (see para. 3.11), as well as proper control of modifications to facilities and activities (see para. 3.20) are particularly important to ensure the control of identified risks ~~for ensuring subcriticality~~. The results of audits are required to be evaluated by the operating organization and corrective actions to be taken where necessary: see para. 4.2(d) of SSR-4 [1].	The important elements for protection that provide or monitor a safety function, and the activities important for safety, are not limited to the control of subcriticality.		X The audits performed by the operating organization (see para. 3.11), as well as proper control of modifications to facilities and activities (see para. 3.19) are particularly important for ensuring safety of the reprocessing facility.		Clarity
42.	GER21	3.23	(a) An analysis of the causes of the deviation to identify ~~lessons~~ roots and	Clarification			X	Causes (including root causes), are already addressed

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			to determine and implement corrective actions to prevent a recurrence; …					in the first part of the phrase. The aim here is identification of the lessons learned to determine and implement corrective actions.
43.	FRA8	3.23	Deviation from operational limits and conditions, deviations from operating procedures and unforeseen changes in process conditions that could affect ~~criticality~~ safety are required to be reported and promptly investigated by the operating organization, and the operating organization is required to inform the regulatory body: see paras 9.34, 9.35 and 9.84 of SSR-4 [1]. The depth and extent of the investigation should be proportionate to the safety significance of the event, in accordance with a graded approach. The investigation should cover the following: (a) An analysis of the causes of the deviation to identify lessons and to determine and implement corrective actions to prevent a recurrence; (b) An analysis of the operation of the facility or conduct of the activity including an analysis of human factors; (c) A review of the safety assessment	Safety includes sub-criticality and the other nuclear risks	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			and analyses that were previously performed, including the safety measures that were originally established					
44.	RUS7	3.25	In accordance with Requirement 5 of SSR-4 [1], the safety of a reprocessing facility is required to be ~~assessed~~ **verified by means of comprehensive safety assessment** ~~in the safety analysis~~ **and systematically assessed throughout the lifetime of the facility**, e.g. ~~verified~~ by periodic safety reviews.	It is following by Requirement 5 of SSR-4. Periodic safety review is one of the tools of safety verification.		X 3.24. The safety of a reprocessing facility is required to be verified by means of comprehensive safety assessment and systematically assessed throughout the lifetime of the facility, for example by periodic safety reviews (see Requirement 5 of SSR-4 [1]).		Clarity and consistency with SSR-4
45.	RUS8	3.25	~~The operating organization should ensure that these periodic safety reviews of the facility form an integral part of the organization's management system.~~	The statement is confusing and needs to be reworded or deleted. Periodic safety review could not be an integral part of the management system (according to GSR Part 2). So, this phrase needs to be reworded.		X The operating organization should establish a process for periodic safety reviews as a part of the management system.		Consistency with other safety guides

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
46.	FRA9	3.26	Requirement 6 of SSR-4 [1] states that "An independent safety committee (or an advisory group) shall be established to advise the management of the operating organization on all safety aspects of the nuclear fuel cycle facility." The safety committee of a reprocessing facility should have members, or access to, suitably qualified and experienced persons in relevant areas, including human factors, criticality and safety as well as radiation protection. Such experts should be available to the facility ~~at all times~~ during commissioning and operation including modifications of the facility.	The availability "at all time" on all these skills must be proportionate to the stakes, which differ according to the type of installation concerned and its life phase. This availability is not necessarily "permanent"		X Removed 'at all times'		Superfluous
47.	GER22	4.4	In the siting of a reprocessing facility, particular consideration should be given to the following: (a) The site's ability to ~~accommodate~~ cope with normal discharges of radioactive material to the environment during operation, including the physical factors affecting the dispersion and accumulation of released radioactive material and the radiation risk to workers, the public and the environment. (b) The suitability of the site to	Clarification	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			~~accommodate~~ fulfil the engineering and infrastructure requirements of the facility, including the following:					
48.	GER23	4.4	(d) External hazards that might particularly affect parts of a reprocessing facility, including: (i) Flooding and meteorological hazards, in particular with regard to possible causing of ~~, possibly leading to~~ nuclear criticality, water penetration through openings in static barriers or damage to vulnerable items such as gloveboxes; (ii) Earthquakes, possibly affecting containment structures for spent fuel, highly active liquids or fissile materials; (iii) Human induced hazards	Clarification		X Flooding and meteorological hazards, with potential to cause criticality, ..		Clarity
49.	GER24	4.5 (b)	The incorporation of continuous or periodic~~, ongoing~~ evaluation of ~~the site parameters for~~ natural ~~processes and~~ phenomena and human induced events that might affect the site during the ~~in the design basis for~~ operation of the facility;	The original text was difficult to understand. To combine a continuous process such as "periodic, ongoing evaluation" with the "design basis" (which is something – more or less – fixed) seemed strange. The proposed new wording might be clearer.		X The periodic review of all natural and human induced external hazards and site conditions in the design basis for the facility		Consistency with SSR-1
50.	ISR2	4.7	This paragraph mentions that security advices have to be taken into account in	Completeness		X The selection of a		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			the selection of nuclear facility sites and that both safety and security aspects should be facilitated by safety and security experts. We suggest to add at the end of the last sentence: …without compromising one another.			site should take into account both safety and security aspects, including to ensure that they do not compromise one another, and should be facilitated by experts from both safety and security.		
51.	GER25	4.8	Even if an existing nuclear site is used for a new reprocessing facility, the site evaluation should be performed using a similar process as that for the siting of a new facility at a new site: see paras 3.24– 3.27 of SSG-35 [18].	Clarification	X			
52.	GER26	5.2	Owing to its expected long service life, the substantial inventory of high toxicity radioactive material, the potential for criticality, and the use of aggressive physical and chemical processes, the design of a reprocessing facility should be based upon the most rigorous application of the relevant safety requirements to a high hazard facility. Considering the significant hazards	It should be mentioned here that, considering the significant hazards associated with a reprocessing facility, the potential for applying a graded approach is limited.			X	Technical precision.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			associated with a reprocessing facility, the potential for applying a graded approach is limited (see para. 3.4). Particular consideration should be given to the reuse and recycling of materials to reduce discharges and waste generation (see also para. 2.2).					
53.	RUS9	5.2	~~Particular consideration should be given to the reuse and recycling of materials to reduce discharges and waste generation (see also para. 2.2).~~	This provision appears to be irrelevant to the above mentioned text and should be removed or moved.	X			
54.	CHN6	5.9	Requirements relating to the design basis for items important to safety and for the design basis analysis for a nuclear fuel cycle facility are established in Requirements 14 and 20 of SSR-4, respectively. A hazards analysis (or equivalent) shall be conducted to identify all design basis accidents in 6.1 of SSR-4.	As mentioned in section 6.1 of SSR4: A hazards analysis (or equivalent) shall be conducted to identify all design basis accidents and their associated initiating events.			X	Para 5.12 addresses the aspect.
55.	JAP3	5.20. (f)	To ensure that hazardous or incompatible mixtures of materials cannot occur in leak collection systems and overflow collection systems, all relevant factors, including the following, should be fully evaluated in the design: (a) The routing of overflow systems designed to prevent uncontrolled	It is not clear what "inactive service" is.		X Added (e.g. cooling water)		Clarification

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			leaks; (b) Drip trays for the collection of leaks and their drain routes; (c) Collecting vessels; (d) Recovery routes; (e) The potential for any system passing through a cell to leak into a cell sump; (f) The potential for any inactive services and reagent feeds to overflow or leak in working areas; (g) Leak detection and collection in radioactive liquid transfer systems, in particular in buried transfer systems; (h) The potential for system overpressure.					
56.	JAP4	5.21.	To meet Requirement 35 of SSR-4 [1] in a reprocessing facility, three barriers (or more, as determined by the safety analysis) should be provided, in accordance with a graded approach. The first static barrier normally consists of process equipment, vessels and pipes, or gloveboxes. The second static barrier normally consists of cells around process equipment or, when gloveboxes are the first containment	"mechanisms" and "instruments" are not clear. Clarify them with simple examples for better understanding.	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			barrier, the rooms around the glovebox(es). The third static barrier is the building itself. The design of the static containment system should consider openings between the different confinement zones (e.g. doors, mechanisms, instruments and pipe penetrations). Such openings should be designed to ensure that confinement is maintained in all operational states, especially during maintenance (e.g. by the provision of permanent or temporary additional barriers) and, as far as practicable, in accident conditions.					
57.	GER27	5.3	Requirements for the confinement radioactive material are established in Requirement 35 and paras 6.123–6.128 of SSR-4 [1]. During ~~In normal~~ operation, internal exposure should be avoided by design, including static and dynamic barriers and adequate zoning. The need to rely on personal protective equipment is required to be minimized: see para. 3.93 of GSR Part 3 [7].	In SSG-4 we have two related requirements: **Para. 6.120.** In normal operation, internal exposure shall be minimized by design and shall be as low as reasonably achievable. **Para. 9.100**. During operation (including maintenance interventions) the			X	Text consistent with SSR-4

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				prevention of internal exposure shall be controlled by both physical and administrative measures, limiting the need for personal protective equipment as far as practicable We think that wording "during operation" is more appropriate here.				
58.	RUS10	5.5	It is proposed to add "see para 5.l6-5.20".	These paras provide additional relevant information.		X See also paras 5.18–5.22 of this Safety Guide.		Correct section numbers referred
59.	FRA10	5.7	The requirements on maintaining subcriticality are established in Requirement 38 and paras 6.138–6.156 of SSR-4 [1]. Recommendations on the design of a reprocessing facility to ensure subcriticality are provided in ~~section 3 of~~ SSG-27 [3].	Rev.1 of SSG-27 has been published in 2022. Section 3 of SSG-27 are general provisions (in both Rev. 0 and Rev. 1). Specific provisions for reprocessing facilities have been added in Section 5 (5.49 – 5.68) of Rev. 1. Proposal to refer to	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				SSG-27 in general, rather than to a specific section.				
60.	GER28	5.10	The specification of the design basis will depend on the potential radiological hazard associated with the facility, and will need to comply with design requirements as well as siting and other regulatory requirements. Consideration should be given to all internal hazards, ~~and~~ external hazards and combination of hazards, selected in the site evaluation phase and associated with the design basis for a reprocessing facility. These hazards typically include internal and external explosions (in particular hydrogen explosions), internal and external fires, dropped loads and handling errors, earthquakes, extreme meteorological phenomena (in particular flooding and tornadoes), accidental aircraft crashes and other applicable external hazards as defined in the site evaluation report. A list of postulated initiating events to be considered for nuclear fuel cycle facilities is provided in the Appendix of SSR-4 [1].	Clarification		X Consideration should be given to all internal hazards, external hazards, and **their credible combinations** selected in the site evaluation phase and associated with the design basis for the facility.		"credible combinations" included
61.	RUS11	5.13		Para 5.13 gives the consequences of heating		X Changes (e.g.		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				various media as a result of radioactive decay, exothermic reactions, heating or evaporation. However, bullet d) mentions melting, concentration, crystallization, changes in water content as "changes of state". It is proposed to clarify the media these changes of state are characteristic for.		melting, concentration, crystallization and changes in water content) relevant to radiological or nuclear criticality safety		
62.	RUS12	5.19	Pyrophoric ~~metals~~ materials (e.g. uranium and zirconium particles from fuel shearing or cladding removal) can cause fire or explosion. The design of the facility should avoid their unexpected accumulation and should provide an inert environment, as necessary.	Para 5.19 refers to the small particles of structural materials and spent fuel from grinding of fuel assemblies as pyrophoric metals. It is proposed to use the term "pyrophoric materials".		X Pyrophoric materials (e.g. particles from fuel shearing or cladding removal) can cause fire or explosion.		Clarity and technical precision
63.	GER29	5.21	To meet Requirement 35 of SSR-4 [1] in a reprocessing facility, three barriers (or more, as determined by the safety analysis) should be provided, in accordance with a ~~graded approach~~ concept of defence in depth.	Requirement 35 of SSR-4 is about defence in depth, not about graded approach. Please check if this statement is in line with statements of para 5.34 of		X …. multiple barriers providing static and dynamic confinement should be provided (as determined by the safety analysis and		Completeness. See also RUS13

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				this Safety Guide (see our comment to para 5.34).		considering the application of graded approach) in accordance with the concept of the defence in depth.		
64.	RUS13	5.21	To meet Requirement 35 of SSR-4 [1] in a reprocessing facility, ~~three~~ **static (two or more barriers) and dynamic confinement systems... commensurate with the degree of the potential hazards**, should be provided in accordance with a graded approach.	In compliance with para 6.123 of SSR-4.		X …. multiple barriers providing static and dynamic confinement should be provided (as determined by the safety analysis and considering the application of graded approach) in accordance with the concept of the defence in depth.		Completeness See also GER29
65.	GER30	5.21 Line 7	…. Such openings should be designed to ensure that confinement is maintained in all operational states, especially during maintenance (e.g. by the provision of permanent or temporary additional barriers) and, ~~as far as practicable,~~ in accident conditions.	Text should be in line with para 5.159 of this Safety Guide, in other words – with statement about "practical elimination" (Requirement 21, para 6.74 of SSR-4).			X	The intent of the comment is accepted. However, the existing text meets the intent of the comment.
66.	GER31	5.22 Line 6	… The design of the dynamic containment system should address the	Clarification		X The design of the		Technical precision.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			following, ~~as far as applicable~~:			dynamic containment system should address the following, as applicable		
67.	UK1	5.23/Line 8	Please add the following text at the end of para. 5.23 (or as a new paragraph is preferred): 'Whilst large/fast process liquor leakage should be detectable, it is possible that small/slow leaks may not be detected by in-vessel level monitoring systems, in-cell leak detection systems, or activity detection systems within the ventilation system discharges. Such small leaks may not reach leak detection equipment and have the potential to evaporate leaving solids that could accumulate. Hence it is important to make design provisions for remote inspections in-cell and to implement an effective through life inspection regime'	The UK nuclear industry has experienced situations where small/slow leaks have occurred, but which were not directly detected via engineered means. However, the leaks were detected via planned, remote, in-cell inspections using cameras. In some cases, small leaks could occur at the start of a leak-before-break scenario and an effective inspection regime can help in preventing/avoiding large/prompt failures.		X The reprocessing facility should be designed to promptly detect and retain any leakage of liquids (including small leaks) from process equipment, vessels and pipes and to recover the volume of liquid to the primary containment.		Suggested text on design provisions for in-cell inspections is addressed in the document (sub-section ageing management programme.)
68.	GER32	5.26	The assessment and design of the building's ventilation system including redundant sub-systems, filtration equipment and other discharge control equipment, should take account of:	Clarification	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			(a) The type and design of static barriers (cells, gloveboxes and building); (b) The classification of areas in accordance with the radiological hazards they contain;					
69.	GER33	5.30 Line 3	… Fans should be supplied with emergency power such that, in the case of a loss of electrical power, the standby ventilation system will begin operation within specified periods ~~an acceptable period~~ of time. The safety analysis should indicate what period of delay may exist between the loss of the primary ventilation system and initiation of the standby ventilation; this may define an operational limit or condition.	Clarification		X Fans should be supplied with emergency power so that, in the case of a loss of electrical power, the standby ventilation system will begin operation within a specified period.		Clarity
70.	GER34	5.31	On-line fans and standby fans should be provided in accordance with the results of the safety assessment. When required by the safety assessment ~~(e.g. near the gloveboxes)~~, alarm systems should be installed to alert operating personnel to system malfunctions, resulting in high or low differential pressures, e.g. near the gloveboxes.	Alarm system should be installed near the gloveboxes (for current example), or alarm about system malfunctions near the gloveboxes should be raised? Please clarify.	X			
71.	GER35	5.32	Fire dampers ~~to prevent the propagation of a fire through~~ in ventilation ducts between compartments separated by	Clarification		X To meet Requirement 22 of		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			fire barriers to prevent the propagation of fire products through these barriers ~~and to maintain the integrity of firewalls~~ should be installed in order to prevent unacceptable consequences by fire propagation between different fire compartments~~, unless the likelihood of a fire spreading or the consequences of such a fire are acceptably low~~ (see para. 6.162 of SSR-4 [1]).			SSR-4 [1] in a reprocessing facility, fire dampers should be installed in ventilation ducts between areas separated by fire barriers, to prevent the propagation of a fire through ventilation ducts, and to limit the propagation of fire products through the ventilation system.		
72.	GER36	5.34	The static barriers (~~at least one is required between radioactive material and working areas~~ (in new facilities at least two static barriers should be provided, so that radioactive material is confined inside the first static barrier during normal operations) normally protect workers from internal exposure and external exposure (see Requirement 35 with paras 6.123–6.125 of SSR-4 [1]). An appropriate number of complementary static	Please put in line with SSR-4. Additionally, check please if current text is in line with para. 5.21 of this Safety Guide.		X In a reprocessing facility, the static barriers (see paras 5.23 and 5.24) normally protect workers from internal exposure and external exposure.		Clarity and consistency with SSR-4. Appropriate paras of the safety guide referred.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			physical barriers and dynamic containment systems should be provided as determined by the safety analysis.					
73.	ISR3	5.35	This paragraph (under the subtitle Protection of Workers) addresses items that should be regularly maintained or accessed (such as sampling stations and pumps) and mentions the solution of installing such items in shielded bulges ("boxes"). We wonder regarding the last sentence of this paragraph, saying: "*The provision of such features should be balanced against … and the additional waste at decommissioning.*" We suggest to consider some kind of rephrasing, considering that this paragraph is part of protection of workers sub section: The balancing mentioned is between the (important) one-time operation of decommissioning and its waste treatment and between the regular maintenance and access of the relevant workers along the lifetime of the facility.	Clarity				The text is clear as is
74.	ISR4	5.46	In this subsection addressing protection against external exposure at the nuclear facility, we suggest to present in	Completeness	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			paragraph 5.46 **using shielding** before **restricting exposure time** (following the relevant sequence mentioned in paragraph 5.44).					
75.	FRA11	5.52	[…] The criticality safety analysis should demonstrate that the design of equipment and the related safety measures are such that the facility is in a subcritical state ~~at all times, i.e. the values of the controlled parameters are always maintained in the subcritical range~~. […] The calculated value of keff (including all uncertainties and biases) should then be compared with the value specified by the design limit (which should be set in accordance with paras ~~2.4–2.7~~ 2.8-2.12 of SSG-27 [3]) and actions should be taken to maintain the value of k_{eff} under this limit (i.e. to define controlled parameters and provisions to maintain the values of these controlled parameters in the subcritical domain).	"at all times" is in contradiction with requirement 38 of SSR-4 and SSG-27 and other paragraphs of the document ("under operational states and conditions that are referred [etc.]" which is not exactly "at all times"). As this is repeated in several paragraphs, it doesn't seem necessary to rewrite the complete conditions here. Removing "at all times" is sufficient for 5.52. + Rev.1 of SSG-27 has been published in 2022. Paras 2.4-2.7 are now 2.8-2.12. + Clarification of the link between controlled parameters and k_{eff} : In practice,		X The nuclear criticality safety analysis should demonstrate that the design of equipment and the related safety measures are in accordance with requirement 38 of SSR-4 [1]. This should be achieved by determining the effective multiplication factor (k_{eff}), which mainly depends on the mass, the geometry, the distribution and the nuclear properties of the fissile material and all other materials with which it is		Clarity See also response to JAP5 and UK3

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				actions/provisions are about parameters, not k_{eff} value (which can't be directly measured/monitored).		associated. The calculated value of k_{eff} (including all uncertainties and biases) should be compared with the value specified by the design limit and actions should then be taken to maintain the value of k_{eff} under this limit (i.e. to define controlled parameters and provisions to maintain the values of these controlled parameters in the subcritical domain). Safety margins should be derived and applied in accordance with paras 2.8-2.12 of SSG-27 Rev. 1[3].		
76.	JAP5	5.52.	Prevention of nuclear criticality is an important topic with various aspects to be considered during the design and operation of a reprocessing facility. The	Should be referred to the latest guides.	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			criticality safety analysis should demonstrate that the design of equipment and the related safety measures are such that the facility is in a subcritical state at all times, i.e. the values of the controlled parameters are always maintained in the subcritical range. This should be achieved by determining the effective multiplication factor (keff), which mainly depends on the mass, the geometry, the distribution and the nuclear properties of the fissionable material and all other materials with which it is associated. The calculated value of keff (including all uncertainties and biases) should then be compared with the value specified by the design limit (which should be set in accordance with paras ~~2.4–2.7~~ 2.8-2.12 of SSG-27 (Rev. 1) [3]) and actions should be taken to maintain the value of keff under this limit.					
77.	UK3	5.52/Line 5 et seq.	Please replace the last two sentences with: 'Safety margins should be derived and applied in accordance with paras 2.4-2.7 of SSG-27[3]'	The guidance in SSG-27 is better developed and more complete than the last 2 sentences. It includes the option to compare with values of control parameters, whereas		X Safety margins should be derived and applied in accordance with paras 2.8-2.12 of SSG-27 Rev. 1[3].		Consistency with SSG-27 Rev. 1 See also response to JAP5 and FRA11.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				DS518 only includes determination of k_{eff}. This option is in the existing SSG-42 sec 4.23 and remains valid.				
78.	FRA12	5.54	[…] Particular care should also be taken to assess all transitional, intermediate or temporary states that occur, or could reasonably be expected to occur, under ~~all~~ operational states and ~~accident~~ credible abnormal conditions.	Consistency with SSG-27 Rev. 1: the wording chosen through all SSG-27 is "operational states and credible abnormal conditions"			X	Consistency with SSR-4 referred in the para.
79.	FRA13	5.55 (a)	The use of interlocks and/or the avoidance of any permanent physical connection from units containing undesirable reagents to the equipment in which more than the critical mass of fissile material (with or without homogeneous neutron poisons) is located	Interlocks only or avoidance of any permanent physical connection only may be sufficient is some cases. "and" is not required in all cases (consistency with 8.60a). Some reagents do not lead to precipitation and thus may be connected. There is no risk if the mass is sufficiently low (recognized that this remark might be covered by the header "when		X Replaced 'and' with 'or' and changed 'connection from units containing reagents to the equipment' to 'connection between units containing reagents and the equipment'		The other text is clear as is.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				required by the safety analysis…") Alternative proposal: "[…] to the equipment identified by the safety analysis."				
80.	FRA14	5.55 (b)	The acidification of cooling or heating fluid loops for equipment containing solutions of nuclear material (to prevent precipitation in case of leakage from the ~~cooling~~ loop into the equipment)	Both kind of loop (cooling and heating) are concerned	X			
81.	FRA15	5.56 & 5.57	5.56 In a number of locations in a reprocessing facility, criticality safety for equipment containing fissile liquid is achieved by the geometry or shape of the containment and/or by concentration control. Criticality safety should be analyzed for any potential leakage, including from/towards the cooling loops: (a) The design should consider the need for cooling or heating fluid loops to meet subcritical design requirements. (b) The overall design should provide for any potential leakage to be transferred to a criticality safe (secondary) containment.	Paragraph 5.56 indeed shares a common theme with paragraph of 5.57 (provisions in case of a leakage from equipment containing fissile material), and 5.57 introduction also applies to 5.56. + Consistency with 5.55 (b)		X 5.59 In a number of locations in a reprocessing facility, nuclear criticality safety for equipment containing fissile liquid is achieved by the geometry or shape of the containment and/or by concentration control. Criticality safety analyses should consider any potential leakage, including leakage from or into cooling		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						or heating loops. The design should consider the need for cooling or heating loops to meet subcritical design requirements. 5.60 The overall design should include provisions for any potential leakage to be transferred to a criticality safe containment…….		
82.	GER37	5.57	In a number of locations in a reprocessing facility, criticality safety for equipment containing fissile liquid is achieved by the geometry or shape of the containment and by concentration control. The overall design should provide for any potential leakage to be transferred to a criticality safe ~~(secondary)~~ containment (see also para. 6.124 of SSR-4).	Is it possible to formulate the statement more general? According to SSR-4 there might be more than two statical containments. Please check		X The term "(secondary)" is removed.		6.124 refers to the means of confinement of radioactive material, where as this paragraph addresses criticality safety.
83.	GER38	5.57	(c) Frequent inspections, continuous ~~closed circuit television camera~~	"Video surveillance" seems to be more modern	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			~~surveillance~~ video surveillance and adequate lighting.	term				
84.	FRA16	5.57	5.57 For transfer to a secondary containment in the case of a leakage, the fissile liquid should drain or have an emptying route […].	Continuation of 5.56 after splitting from 5.57 content			X	Addressed in response to FRA15. See also GER37
85.	UK4	5.59/Line 1	Please replace the first sentence with: 'When required by the safety analysis instruments should be used which are specifically intended to detect accumulations of fissile material'	This provides a clearer message with a structure that is more consistent with similar entries in the guide, for example para. 5.55.		X When indicated by the safety analysis, instruments specifically intended to detect accumulations of fissile material ….		Clarity
86.	GER39	5.64	In accordance with para. 6.60 and para. 6.76 of SSR-4 [1], postulated initiating events from the list of internal hazards and external hazards including their combinations for reprocessing facilities are required to be identified for detailed further analysis. In accordance with para. 6.60 and para. 6.76 of SSR-4 [1], postulated initiating events from the list of internal hazards, external hazards and their combinations for reprocessing facilities are required to be identified for detailed further analysis.	Please add as para. 6.76 of SSR-4 requires consideration of combinations of events and failures as well.		X In accordance with Requirement 19 and paras. 6.1, 6.60–6.76 of SSR-4 [1], postulated initiating events from the list of internal hazards and external hazards for a reprocessing facility, and credible combinations thereof, are required		Consistency with SSR-4. See also response to CHN4

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						to be identified for detailed further analysis.		
87.	CHN4	5.64	In accordance with para.6.1 and 6.60 of SSR-4, postulated initiating events from the list of internal hazards and external hazards for reprocessing facilities are required to be identified for detailed further analysis by using risk analysis (or equivalent) methods.	As mentioned in section 6.1 of SSR4: A hazards analysis (or equivalent) shall be conducted to identify all design basis accidents and their associated initiating events. It is mentioned in Annex that risk criteria may be expressed in a number of forms including: qualitative or quantitative limits on the consequences of accidents; the frequency of accident. But it is mentioned that in section 6.1 of SSR4 : Fire hazard analysis involves estimation of the frequency or probability of occurrence of fires.		X In accordance with Requirement 19 and paras. 6.1, 6.60–6.76 of SSR-4 [1], postulated initiating events from the list of internal hazards and external hazards for a reprocessing facility, and credible combinations thereof, are required to be identified for detailed further analysis.		See also response to GER39
88.	CHN5	5.65	The design of a reprocessing facility is required to take into account the nature	In this document, internal risks include fire and		X The design of a		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			and severity of internal hazards, e.g. fire and explosion, criticality: see Requirement 15, paras 6.43–6.6.48, and Appendix of SSR-4.	explosion, hoisting failure, equipment failure, loss of auxiliary system, leakage and overflow, flooding, chemical hazards, use of non atmospheric pressure equipment。But in the Appendix of SSR4, the initiating event includes loss of auxiliary system, criticality, operation error, equipment failure, hoisting failure, other internal events include internal fire or explosion, internal flood, exothermic chemical reaction, hydrogen combustion and explosion. It can be seen that the initiating event should also include criticality.		reprocessing facility is required to take into account the nature and severity of internal hazards(see Requirement 15, paras 6.43–6.48, and the Appendix to SSR-4 [1]).		
89.	FRA17	5.67	(b) Potentially flammable materials at different levels such as …	The materials listed have highly variable ignition characteristics ranging from extremely low flammable to potentially flammable		X (a) Pyrophoric materials, solvents and reactive chemicals; (b) Other combustible		Clarity and technical precision

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						materials such as polymeric neutron shielding (normally associated with gloveboxes), hydraulic oil used for shearing machines, electrical cabling and process and operational waste (e.g. wipes, personal protective equipment), including office waste.		
90.	FRA18	5.68	… destroying neutron decoupling or absorbing devices	Two types of devices regarding neutrons could be encountered			X	Neutron absorber degradation specified earlier in the sentence.
91.	GER40	5.69, Line 4	… Fire hazard analysis should be used to assess the inventory of fuels and ~~initiation~~ ignition sources, and to determine the appropriateness and adequacy of measures for fire protection.	Editorial	X			
92.	GER41	5.70 Footnote 19	In some Member States, fires involving nuclear materials (e.g. an actinide loaded solvent fire) and other plant internal ~~general (internal, conventional)~~ fires (e.g. a control room fire caused by	Clarification	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			an electrical fault) are considered separately and explicitly in the safety assessment for ~~additional~~ clarity and ~~to help~~ to ensure that all potential radiological and non-radiological hazards from both categories of fire are adequately addressed ~~adequately~~.					
93.	GER42	5.71 and footnote 20	Fire hazard analysis ~~can~~ provides valuable information ~~on which it is possible to based design decisions or to identify weaknesses that might otherwise have gone undetected~~ as basis for making decisions on the design and for identifying potential weaknesses in the design. Even if the likelihood of a fire occurring is low, the severity of the consequences to safety may be significant. ~~it might have significant consequences with regard to safety and, as such,~~ Therefore, suitable and reliable ~~appropriate~~ protection~~ve~~ measures should be implemented to prevent fires from starting or an inadmissible propagation of a fire (e.g., by forming well-defined ~~delineating small~~ fire compartments with a suitable size[20] ~~areas~~) ~~to prevent fires or to prevent the propagation of a fire~~. The analysis	Clarification		X Fire hazard analysis provides useful information that could be a basis for making decisions on the design or for identifying potential weaknesses in the design. Even if the likelihood of a fire occurring is low, the severity of the consequences in some of the areas of a reprocessing facility might be significant. Appropriate preventive and protective measures		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			should also include a systematic review of the provisions made in place for preventing, detecting, fighting and mitigating ~~and fighting~~ fires. Footnote 20 ~~A~~ One or more rooms ~~or suite of rooms~~ surrounded by a qualified fire barrier ~~within a firewall~~, possibly with separate fire detection and fire ~~fighting~~ extinguishing provisions, inventory controls and evacuation procedures.			should be implemented (e.g. use of non-combustible or fire retardant construction materials , provision of fire barriers, provision of adequate separation distances for items important to safety) to prevent fires or to prevent the propagation of a fire. The analysis should also include a systematic review of the provisions made for prevention of the fire initiation, for timely detection of fires, for extinguishing of fires, and for prevention of the spread of fires that cannot be extinguished.		

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
94.	GER43	5.72	An important aspect of the fire hazard analysis for a reprocessing facility is the identification of areas ~~of~~ in the facility that require special consideration (see Requirement 22 of SSR-4 [1]). In particular, the fire hazard analysis should consider the following: (a) Areas where fissile material is processed and stored; (b) Areas where radioactive material is processed and stored; (c) Gloveboxes, especially those in which plutonium is processed; (d) Workshops, storages and laboratories in which ~~flammable or~~ combustible liquids and gases, solvents, resins or reactive chemicals are used and/or stored, including cranes where combustible lubricants ~~oils~~ are used for gear boxes; (e) Areas where pyrophoric metal powders are processed (e.g. uranium and zirconium from shearing or decladding); (f) Areas with high fire loads, such as waste storage areas; (g) Rooms housing ~~systems and components~~ items important to safety (e.g. rooms housing last stage filters of	Clarification		X An important aspect of the fire hazard analysis for a reprocessing facility is the identification of areas of the facility that require special consideration (see Requirement 22 of SSR-4 [1]). In particular, the fire hazard analysis should consider the following: (a) Areas where fissile material is processed and stored; (b) Areas where radioactive material is processed and stored; (c) Gloveboxes, especially those in which plutonium is		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			the ventilation system, electrical switch rooms), whose ~~degradation might~~ failure may lead to inadmissible radiological consequences or consequences ~~that are unacceptable~~ in terms of criticality; (h) Process control rooms and supplementary control rooms; (i) Cable rooms and cable ~~trays~~ ducts, (j~~) Evacuation~~ Access and escape routes.			processed; (d) Workshops, laboratories and storage areas containing flammable and/or combustible liquids and gases, solvents, resins or reactive chemicals, including cranes where combustible lubricants are used for gearboxes; (e) Areas where pyrophoric metal powders are processed (e.g. uranium and zirconium from shearing or decladding); (f) Areas with high fire loads, such as waste storage areas; (g) Rooms containing items important to safety (e.g. rooms		

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						containing the last stage filters of the ventilation system, electrical switch rooms), whose failure might lead to radiological consequences or consequences that are unacceptable in terms of criticality safety; (h) Process control rooms and supplementary control rooms; (i) Cable rooms, cable trays and ducts; (j) Access and escape routes.		
95.	FRA19	5.72 (g)	[…] or consequences that are unacceptable in terms of criticality safety;	"Criticality safety" is more appropriate here than only "criticality" (the situation can be unacceptable before being critical: it's unacceptable from the moment when the margins of subcriticality are no	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				more sufficient)				
96.	GER44	5.74	Requirements for measures to accomplish the dual aims of fire prevention and mitigation of the consequences of a fire are established in paras 6.162–6.167 and 9.109–9115 of SSR-4 [1]. For a reprocessing facility, these measures include the following: (a) Minimization of the combustible load of individual areas, including the effects of fire-enhancing chemicals such as oxidizing agents; (b) Segregation of ~~the~~ areas where non-radioactive hazardous material ~~is stored~~ from process areas is stored; (c) ~~Definition~~ Specification of fire ~~zones~~ compartments with specific requirements on their separation / segregation from other ~~zones and or premisses~~ fire compartments or buildings; (d) ~~Installation~~ Implementation of ~~a~~ fire detection and alarm system designed to allow ~~the early~~ timely detection and ~~accurate~~ identification of the location of any fire, rapid dissemination of information on the fire and, where ~~installed~~ in place, ~~the~~	Clarification		X (a) (b) Segregation of the process areas from the areas where non-radioactive hazardous material is stored; (c) Specification of fire compartments with specific requirements on their separation and/or segregation from other fire compartments or buildings; (d) Implementation of a fire detection and alarm system designed to allow the timely detection and identification of the location of any fire, rapid dissemination		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			an automatic ~~activuation~~ actuation of stationary fire extinguishing systems ~~automatic devices for fire suppression~~; (e) Selection of materials, including building materials, process and glovebox components~~,~~ and materials for penetrations, in accordance with their functional requirements and required fire resistance ratings; (f) Compartmenta~~liza~~tion of buildings and ventilation ducts as far as possible to prevent the spreading of fires between fire compartments; (g) Limiting the use of flammable liquids or gases inside their flammability limits; (h) ~~Suppression or limitation of~~ Minimizing the number of possible ignition sources, such as open flames, welding or electrical sparks, and their segregation from combustible material to the extent practical; (i) Insulation of hot or heated surfaces; (j) Selection of suitable ~~Consistency of the~~ fire extinguishing media consistent with the requirements of other safety analyses, especially with the requirements for criticality control (see Requirement 38 and para. 6.146 of SSR-4 [1]).			of information on the fire and, where in place, the activation of automatic devices for fire suppression; (e) Selection of materials, including building materials, process and glovebox components and materials for penetrations, in accordance with their functional requirements and required fire resistance ratings; (f) Compartmentation of buildings and ventilation ducts as far as possible to prevent the spread of fires between fire compartments; (g) Avoiding the use of flammable liquids		

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						or gases inside their flammability limits; (h) Minimization of the number of possible ignition sources, such as open flames, welding or electrical sparks, and their segregation from combustible material to the extent practicable; (i) Insulation of hot or heated surfaces; (j) Selection of suitable fire extinguishing media consistent with the findings of other safety analyses, especially with the requirements for criticality control (see Requirement 38 and para. 6.146 of SSR-4 [1]).		

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
97.	ISR17	5.74	9115 has to be 9.115	Editorial	X			
98.	FRA20	5.76	(e) Ventilation ducts should be airtight and resistant to heat and corrosive products that might result from a fire when necessary	All ventilation ducts are not designed to be resistant to corrosive products that might result from a fire because of the diversity of this kind of products. After a fire, controls are realized. If needed ventilation ducts are replaced.		X Where necessary, the ventilation ducts should be airtight and resistant to heat and corrosive products that might result from a fire		Clarity
99.	GER45	5.77	~~Lines crossing the boundaries of compartments and firewalls~~ Pipework and electrical cable routes (e.g. gas ~~lines~~ and process lines, electrical ~~and instrument~~ cables ~~and lines~~) penetrating fire barriers separating fire compartments should be designed to ensure that fires do~~es~~ not spread from one fire compartment to another.	Clarification		X Penetrations for cable routes and pipework crossing the boundaries of fire compartments and firewalls (e.g. process lines, service lines, cables and cable trays) should be designed to ensure that fire does not spread through the penetrations.		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
100.	GER46	5.78	~~Evacuation~~ Access and escape routes for fire and criticality events at a reprocessing facility should be considered in the design in accordance with national regulations and the safety assessment. ~~These should follow the same routes as far as possible (i.e. to reduce the number of different evacuation routes), where this does not impact significantly on fire safety or criticality safety~~.	Sentence "These should follow the same routes as far as possible (i.e. to reduce the number of different evacuation routes), where this does not impact significantly on fire safety or criticality safety" is not understandable. Is it meant here that "escape roots for fire events" and "escape roots for criticality events" should be the same? In this case reformulation is necessary.	X			
101.	GER47	5.80	To prevent a release of radioactive material resulting from an internal explosion, the following provisions should be considered in the design of a reprocessing facility: (a) The adoption of processes with a lower potential risk for fire or explosion; (b) The need to maintain the separation of incompatible chemical materials in normal operation and ~~abnormal situations~~ in anticipated operational	Please put in line with the terminology of IAEA Safety Guide		X (b) The need to maintain the separation of incompatible chemical materials in normal operation and anticipated operational occurrences (e.g. recovery of leaks);		

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			occurrences (e.g. recovery of leaks);					
102.	FRA21	5.80	The use of blow-out panels to mitigate the effects of the explosion of non-radioactive materials in areas that do not contain radioactive materials	blow-out panels should be used only in non-radiological buildings in order not to degrade radiological containment			X	Use of blow out panel in any case need to be analyzed.
103.	ISR18	5.82b	Unnecessary spaces	Editorial	X			
104.	ISR5	5.86	This paragraph specifically addresses failures of computer and software systems. We suggest to consider mentioning explicitly computer security aspects (including the necessity to improve their vulnerability).	Completeness	X			
105.	FRA22	5.87	(a) Criticality ~~accident~~ detection and alarm system	Consistency with terminology of 5.61, 5.62, 5.128, 7.12, and with § 6 of SSG-27 rev 1 (see comment on 2.17 also)	X			
106.	ISR6	5.88	Although it can be understood as implicitly included, we suggest to add **control room(s)** to the list presented in paragraph 5.88, regarding emergency power supply.	Completeness			X	Items (h) and (i) cover the intent
		5.90	The chronology for restoring electrical power to the reprocessing facility should be specified during design and should take account of the following: (a) The 'current power status' (off,	What exactly items are meant here? Items important to safety or items of equipment? As term "item" is, according			X	Use of word 'item' is consistent with IAEA Glossary

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			running on emergency supply, time to loss of backup power, etc.) of the items of equipment; (b) The safety significance or priority of the item of equipment being restored to (normal) service; (c) The interruptions of supply during switching operations; (d) The initial power demand of items of equipment within the reprocessing facility and supply capabilities and capacity	to IAEA Glossary, reach on meanings, we suggest to make the wording more precise.				
107.	GER48	5.92	The loss of services, such as process gas for ~~instrumentation and~~ the control of the operations, cooling water for process equipment, ventilation systems and inert gas supplies, ~~might also have consequences for safety~~ may also inadmissibly impair safety.	What type of gas is meant here? Process gas? Please clarify. Additionally, para. 5.128 of this Safety Guide is listing safety related instrumentation and control systems at a reprocessing facility. Do the listed systems use gas? If not, it is not rather correct to talk about instrumentation and control systems in case of loss of gas, "control of operation" might be better.		X The loss of services such as process gas for control of operations, cooling water for process equipment, ventilation systems, and inert gas supplies, might also have impact on safety.		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				Please verify.				
108.	GER49	5.95	Where cooling circuits are installed, especially in highly active systems, the effects of waterside corrosion, water chemistry, radiolysis (e.g. peroxide production) and stagnant coolant (~~no~~ cooling not required for a certain period or a redundant cooling system) should be included in design considerations.	Clarification	X			
109.	FRA23	5.97	The potential effects of corrosion or abrasion on the dimensions of equipment containing fissile material are required to be taken into account in the criticality assessment (e.g. effects on the thickness of the walls of process vessels whose method of criticality control is geometry ~~and concentration~~): see para 6.146 of SSR-4 [1]).	The issue is not only for equipment where geometry and concentration are controlled. It relates to all equipment where geometry is controlled (with or without concentration control).	X			
110.	FRA24	5.98	Segregation of electrical services, instrumentation and control systems and their power supplies, and data and control cables from liquid ~~and gaseous~~ feeds should be strictly enforced as far as practicable.	Formally this paragraph is about flooding.		X Electrical services, instrumentation and control systems and their power supplies, and data and control cables should be segregated from liquid and gaseous		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						feeds (e.g. steam lines) as far as practicable.		
111.	GER50	5.100	Walls (and floors if necessary) of rooms where flooding could occur should be capable of withstanding the liquid load, and SSCs ~~safety related equipment~~ should not be affected by flooding. The dynamic effects of large leaks and the potential failure of any temporary 'dams' formed by equipment or internal structures should also be considered.	Safety related equipment or SSCs? Please verify		X Walls (and floors, as necessary) of rooms where flooding could occur should be capable of withstanding the liquid load, and SSCs important to safety should not be affected by flooding.		Clarity
112.	JAP6	5.104.	As far as practicable, provisions for in-service testing of equipment installed in controlled areas and cells should be defined in accordance with national requirements on pressurized and/or sub atmospheric equipment24. If this is not possible, additional safety features should be specified at the design stage (e.g. oversizing with regard to pressure, increased safety margins, special justification for alternative testing regimes) and in operation (e.g. enhanced monitoring of process parameters). A specific safety	Under what circumstances "implosion" would occur is difficult to understand. It would be appreciated if what circumstances are supposed is explained. Does "implosion" mean abrupt buckling of the container?				Implosion is caused by reduced pressure effects, typically negative pressure (e.g. collapse of a containment due sudden pressure drop, that may be caused by excess rate of outflow, or cooling) with inadequate pressure relief.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			assessment of any proposed alternative testing and operating regime should be made with the objective of demonstrating that the probability of failure and the consequences or risk, as appropriate, are consistent with the acceptance criteria for the facility. The potential consequences of an explosion, implosion or leak, including during testing, should be assessed, and complementary safety features should be identified to minimize potential consequences, in accordance with the concept of defence in depth.					
113.	GER51	5.105	The design of a reprocessing facility is required to take into account the nature and severity of external hazards: see Requirement 16 and paras 6.49–6.54 of SSR-4 [1]. Such external hazards, either natural or human induced, are required to be identified and evaluated in accordance with the provisions of SSR-1 [17]. Detailed recommendations on external hazards are provided in Safety Standards Series Nos SSG-9 (Rev. 1), Seismic Hazards in Site Evaluation for Nuclear Installations [21], SSG-18, Meteorological and Hydrological	Please add SSG-79, Hazards Associated with Human Induced External Events in Site Evaluation for Nuclear Installations (Publication 2023)	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			Hazards in Site Evaluation for Nuclear Installations [22], SSG-21, Volcanic Hazards in Site Evaluation of Nuclear Installations [23], SSG-67, Seismic Design for Nuclear Installations [24] and SSG-68, Design of Nuclear Installations Against External Events Excluding Earthquakes [25], SSG-79, Hazards Associated with Human Induced External Events in Site Evaluation for Nuclear Installations					
114.	FRA25	5.107 (e)	Loss of the method of criticality control ~~The effect on criticality safety functions~~ such as […]	Consistency with the wording used elsewhere in the document and (e.g. 5.54, 5.97, 5.128).		X (e) The effect of the following on nuclear criticality safety functions (e.g. geometry control, moderation, absorption and reflection):		Clarity
115.	GER52	5.108	In accordance with Requirement 14 and para. 6.49 of SSR-4 [1], a reprocessing facility is required to be designed to withstand the design basis earthquake. The design should also be evaluated for beyond design basis seismic events to ensure that events moderately exceeding the design basis ~~such an~~	Without a restriction on the severity of the beyond design basis event, the recommendation cannot be fulfilled. It is hard to imagine how it could be ensured that a ground motion exceeding the		X In accordance with Requirement 14 and para. 6.49 of SSR-4 [1], a reprocessing facility is required to be designed to withstand the		Clarity and consistency with SSR-1 and SSR-4

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			~~event~~ will not impair the function of control rooms, will not cause loss of confinement or a criticality accident, and that there is adequate seismic margin to avoid cliff edge effects.	design basis, e.g., by a factor 5 would not impair the function I&C equipment or even confinement. The proposed change might solve this problem. If it is considered too weak, the paragraph should be reformulated and based on the ideas of "sufficient safety margins" and "avoiding cliff-edge effects" or a limit for the exceedance frequency of, e.g., the ground motion of the beyond design basis seismic hazard should be given.		design basis earthquake. The design should also be evaluated for beyond design basis seismic events considered as design extension conditions (see para 6.73 of SSR-4 [1]), to ensure that such an event will not impair the function of control rooms, will not cause loss of confinement or a criticality accident, and that there is adequate seismic margin to avoid cliff edge effects		
116.	GER53	5.109	Depending on the reprocessing facility's site characteristics and location, as evaluated in the site evaluation (see Section 4), the effect of a tsunami induced by an earthquake ~~and~~ or other seismically induced extreme flooding events should be addressed in the facility design.	Clarification. It should be made clear that this paragraph is about flooding events induced by the seismic event.		X Depending on the reprocessing facility's site characteristics and location, as identified in the site		Clarity and consistency with SSR-1.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						evaluation (see Section 4), the effect of a tsunami or other extreme flooding events induced by an earthquake are required to be addressed in the facility design (see paras 5.18–5.20 of SSR-1 [18]).		
117.	GER54	5.112	(e) ~~Keeping the groundwater level within acceptable limits during flooding;~~ Ensuring that high groundwater levels during floods do not jeopardize the integrity and functionality of safety related SSCs; (f) The ability to maintain e~~E~~vents consequential to extreme meteorological conditions.	Controlling the ground water level might be difficult and is not the usual approach to this issue. Consideration of high ground water levels in the design of structures and systems seems or appropriate. Clarification		X (d) Means of ensuring that high water levels during floods do not jeopardize the integrity and functionality of SSCs important to safety		Clarity..
118.	GER55	Heading before 5.113	~~Tornadoes~~ High Winds	As windborne missiles can also arise from high linear winds (not only tornadoes), the heading			X	Consistency with safety standards.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				should be modified to account for that.				
119.	GER56	5.115	Besides the temperatures themselves, the ~~The~~ potential duration of extreme low or high temperatures is required to be taken into account in the design: see para. 5.11 of SSR-1 [17].	Clarification. Although it is obvious, it might be good to mention that not only the duration of extreme temperatures but also the temperatures themselves need to be taken into account.		X Extreme low or high temperatures, and their potential duration are required to be taken into account in the design (see para. 5.11 of SSR-1 [18]).		Clarity
120.	GER57	5.115	(c) Adverse effects on a building's venting, heating and cooling systems, to avoid poor working conditions and excess humidity in the buildings and adverse effects on ~~structures, systems and components~~ SSCs important to safety and their supporting systems.	Supporting systems are also important in this case.		X Adverse effects on a building's ventilation, heating and cooling systems, that could cause poor working conditions and excess humidity in the buildings and adverse effects on SSCs important to safety		SSCs important to safety includes also supporting SSCs
121.	GER58	5.116	If limits for humidity and/or temperature are specified in a building or a compartment, the air conditioning system should be designed to perform	Weather conditions could also be extreme dry or extreme cold and thus have impact on humidity	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			efficiently also under extreme ~~hot or wet~~ weather conditions.	and temperature in a building or a compartment. Can you please check if the statement should be formulated more general?				
122.	GER59	5.117	The occurrence of snowfall and ice storms and their effects are required to be taken into account in the design of the facility and the safety analysis: see paras 5.11 and 5.27 of SSR-1 [17]. Snow and ice are generally taken into account as an additional load on the roofs of buildings. Icing in outdoor switchyards may lead to short circuits and thus a loss of off-site power. …	The paragraph correctly addresses issues related to snowfall, but the specific effects of icing are missing.		X Snow and ice are generally taken into account as an additional load on the roofs of buildings. Snow can also block the inlets of ventilation systems and the outlets of drains, and icing in outdoor switchyards can lead to short circuits and thus a loss of off-site power.		Clarity
123.	GER60	5.119	For extreme rainfall, attention should be focused on the stability of buildings (e.g. hydrostatic and dynamic effects), the water level and, where relevant, the potential for mudslides. Besides the results of the flooding hazard assessment according to SSG-18	Although it is very important to consider historical flood levels, assessments of flooding hazards are typically based on probabilistic / statistic criteria, i.e. water levels		X In addition to the results of the flooding hazard assessment performed in accordance with the		

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			, ~~C~~consideration should be given to the highest flood level historically recorded …	with a specific exceedance frequency (cf. SSG-18). This fact should be reflected in this paragraph too.		recommendations provided in SSG-18 [23], consideration should be given to the highest flood level historically recorded…..		
124.	FIN1	5.125	Instrumentation and control systems are required to be provided for criticality safety, and for hot cells, gloveboxes and hoods: see paras 6.172–6.174.	This document does not have these paragraphs. Please, give the proper reference.	X			
125.	GER61	5.125	Instrumentation and control systems are required to be provided for criticality control~~ safety~~, and for hot cells, gloveboxes and hoods for fulfilling their requirements for static and dynamic confinement: see paras 6.172–6.174 of SSR-4 [1].	Please make wording more precise.	X			
126.	RUS14	5.125	The statement is confusing and needs to be reworded.	It can be mistakenly understood that instrumentation and control systems are required to be provided only for criticality safety, and for hot cells, gloveboxes and hoods but not for many other applications.		X Instrumentation and control systems are required to be provided for criticality control, and for hot cells, gloveboxes and hoods for fulfilling their requirements for static and		See also response to GER61

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						dynamic confinement(see paras 6.172–6.174 of SSR-4 [1]).		
127.	RUS15	5.125	It is recommended to clarify when automatic control systems are required to be provided.	It is important to provide recommendations when automatic control systems are required to be provided.			X	Recommendations are provided in subsequent paras (e.g. 5.138, 5.146)
128.	GER62	5.126	Passive and active engineering controls are more reliable than administrative controls and should be preferred for control in operational states and in accident conditions. Automatic systems are required to be designed to maintain process parameters within the operational limits and conditions or to bring the process to a predetermined safe state: see paras. 6.169 and 6.170 of SSR-4 [1]. ~~The safe state for a reprocessing facility is generally the shutdown state~~. According to SSR-4 safe state is the facility state, following an anticipated operational occurrence or accident conditions, in which the nuclear fuel cycle facility is subcritical and the main safety functions can be ensured and maintained stable for a	We suggest to introduce here definition of "safe state" from SSR-4 (or from IAEA Safety Glossary, they are the same). Additionally, please verify if statement "The safe state for a reprocessing facility is generally the shutdown state" is correct one for all the cases.			X	Safe state already defined in SSR-4.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			long time.					
129.	FRA26	5.128 (a) (i)	Depending on the method of criticality control, ~~the monitoring and~~ controlled parameters (then requiring monitoring) ~~should~~ usually include mass, concentration, acidity, isotopic composition or fissile content, ~~burnup~~ and quantity of reflectors and moderators as appropriate	Controlled parameter is used in 5.52. The use of "usually include" rather than "should include" is more appropriate (as in SSG-6 5.94 rather than SSG-7 4.88): this paragraph doesn't deal with recommending to have controlled parameters, but to have instrumentation to monitor those existing (in accordance with other paragraphs) parameters + clarification + burnup is the purpose of the following item (5.128 (a) (ii))		X Depending on the method of criticality control, the monitoring and control parameters include mass, geometry, concentration, acidity (which might have an impact on solubility, extraction, stripping or precipitation), isotopic composition or fissile content, and quantity of reflectors and moderators as appropriate.		Clarity
130.	ISR7	5.128 (a)i	We suggest to consider adding **geometry** to the list of parameters to be included as monitoring and control parameters for criticality control.	Completeness	X			
131.	JAP7	5.128. (a)(i)	Safety related instrumentation and control at a reprocessing facility	It seems difficult to understand the reason why	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			includes systems for the following: (a) Criticality control, criticality detection and alarm: (i) Depending on the method of criticality control, the monitoring and control parameters should include mass, concentration, acidity, isotopic composition or fissile content, burnup and quantity of reflectors and moderators as appropriate. ……	acidity is included here. Please explain it.				
132.	FRA27	5.128	(c) (iv) Controlling temperatures and pressure and other relevant conditions to prevent explosions …	Only the parameters relevant to the explosion should be monitored.	X			
133.	ISR8	5.130	Similarly to our line of reasoning in comment no. 4 above, we suggest to replace "…to protect instruments or workers as appropriate" with "… to protect workers or instruments as appropriate".	Clarity	X			
134.	ISR9	5.132(a)	We suggest to consider adding **dynamic range** to the factors listed in this paragraph as factors that should be considered in choosing the type of instrumentation to install in a nuclear facility.	Completeness			X	Like dynamic range, there would be many other operational factors, It would not be possible to list all of them.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
135.	GER63	5.135	The recommendations in paras 2.9–2.12 apply to all control systems in a reprocessing facility. In particular, the hierarchy of design measures established in para. 6.12 of SSR-4 [1] (application of passive design features, in preference to application of active design features, in preference to administrative controls (operator action)) are required to be applied in accordance with the concept of defence in depth ~~a graded approach~~ and the available reaction time (grace period). Application of a graded approach, depending from safety significance, for ~~the concept of defence in depth to avoiding challenges to safety features or safety controls should~~ could also be considered.	Clarification		X The recommendations in paras 2.9–2.12 apply to all control systems in a reprocessing facility. In particular, the hierarchy of design measures established in para. 6.12 of SSR-4 [1] (application of passive design features, in preference to application of active design features, in preference to administrative controls (operator action)) are required to be applied in accordance with the concept of defence in depth and the available reaction time (grace period) (see Requirement	X	Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						10 of SSR-4 [1]).. 		
136.	GER64	5.137	Devices should be installed that provide, in an effective manner, visual and, as appropriate, audible indications of deviations from normal operation and that could affect safety. Specifically, information is required to be displayed in such a way that operating personnel can easily determine if a facility is in a safe ~~state~~ condition and, if it is not, can readily determine the appropriate course of action to return the facility to a safe and stable ~~state~~ condition: see para. 6.15 of SSR-4 [1].	According to paras 2.10 and 5.126 of this Safety Guide and according to definition in SSR-4, the safe state for a reprocessing facility is the shutdown state. Is shutdown state meant here, in para 5.137? Or perhaps safe condition? Para. 6.15 of SSR-4 is about "putting the facility into a safe and stable condition in a timely manner". Additionally, please verify and please check for both terms, "safe state" and "safe condition" in the whole document, it looks like they are being used not consistent.		X First sentence of the text deleted (repetition of text in 5.130) and the second sentence with suggested corrections is moved to the end of 5.130		Clarity
137.	MEX1	5.138	Requirements for transfers of radioactive material and other hazardous material are established in	Take into account limiting conditions for transfers of hazardous material		X Requirements for transfers of		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			Requirement 28 and paras 6.111 and 6.112 and requirement 57 para 9.32 of SSR-4 [1]. In addition, the following measures should be applied, as far as practicable, to allow early detection of anticipated operational occurrences as part of defence in depth.	according to requirement 57 para. 9.32 of SSR4. 9.32 Limiting conditions for safe operation shall be established for authorizing the transfer of hazardous (radioactive, fissile or chemically reactive) materials between buildings. Such transfer shall depend on the positive acceptance of the material by operators in the receiving building before transfer commences.		radioactive material and other hazardous material are established in Requirements 28 and 57, and paras 6.111, 6.112, and 9.32 of SSR-4 [1].		
138.	GER65	5.145 (g)	(g) Training of operators on procedures to be followed for normal operation and for anticipated operational occurrences ~~abnormal conditions~~ (see para. 9.48 of SSR-4 [1]).	Please put in line with IAEA Safety Glossary		X The training of operating personnel on procedures to be followed in operational states and in accident conditions		Consistency with safety standards
139.	GER66	5.147	The list of postulated initiating events identified is required to take into account all the internal and external	Clarification		X The list of postulated initiating		Consistency with SSR-4. SSCs important to safety also

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			hazards, combinations of them and the resulting event scenarios: see Requirement 19 of SSR-4 [1]. The safety analysis is required to consider all the SSCs ~~structures, systems and components~~ important to safety and their supporting systems that might be affected by the postulated initiating events identified: see para. 4.20 of GSR Part 4 (Rev. 1) [15]			events identified is required to take into account all the internal and external hazards and the resulting event scenarios(see Requirement 19 of SSR-4 [1]). The safety analysis is required to consider all the SSCs important to safety that might be affected by the postulated initiating events identified: see para. 4.20 of GSR Part 4 (Rev. 1) [15].		include supporting SSCs.
140.	FIN2	5.148	Footnote 29	Para 5.148 does not mention bounding case, should probably be 5.149. Please check.	X			
141.	GER67	5.148	For reprocessing facilities, the safety analysis should be performed iteratively with the development of the design with the objectives of achieving the following:	SSR-4 only cites as low as reasonably achievable. Also, the next bullet point cites “achievable”.	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			(a) That doses to workers and the public during operational states do not exceed dose limits and are as low as reasonably achievable ~~practicable~~, in accordance with Requirement 9 of SSR-4 [1]; (b) That the doses to workers and the public during and following accident conditions remain below acceptable limits and are as low as reasonably achievable in accordance with Requirement 9 of SSR-4 [1];					
142.	RUS16	5.149 Section 'Safety analysis for operational states at a reprocessing facility'	It is recommended to add the provisions on the assessment of internal exposure.	Internal exposure is an important component of the whole exposure.	X			
143.	GER68	5.154	Footnote 29 Bounding cases (also called limiting cases or enveloping cases) are used for the estimation of consequences, see para. 6.62 of SSR-4 [1] and para. 5.14~~8~~9 of this Safety Guide	We guess para. 5.149 is meant here, please verify		X Bounding cases (also called limiting cases or enveloping cases) are used for the estimation of consequences.		Footnote revised and moved to earlier para where the term 'bounding cases' used for first time

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
144.	GER69	5.155	The main steps in the assessment of the possible radiological or chemical consequences of an accident at a reprocessing ~~plant~~ facility include the following: …	Editorial. We would like to suggest using the same term. Applies for further 11 paras (e.g. 7.45, 8.21, 8.106 etc).	X			
145.	GER70	5.155	(f) Specification of the SSCs ~~structures, systems and components~~ important to safety and their support systems that may be credited to reduce the likelihood and/or to mitigate the consequences of accidents. These SSCs ~~structures, systems and components~~ important to safety and their support systems that are credited in the safety assessment are required to be qualified to perform their functions reliably in accident conditions: see paras 6.30 and 6.36 of SSR-4 [1].	Clarification		X Specification of the SSCs important to safety that may be credited to reduce the likelihood and/or to mitigate the consequences of accidents. The SSCs important to safety that are credited in the safety assessment are required to be qualified to perform their functions reliably in accident conditions(see Requirement 30 of SSR-4 [1]).		SSCs important to safety includes also supporting SSCs
146.	FRA28	5.155	(d) Identification and analysis of conditions at the facility, including	The timeframe for emissions and the			X	The text is clear as is

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			internal and external events that could lead to a release of material or of energy with the potential for adverse effects, the timeframe for emissions and the exposure time, when these items are relevant, in accordance with reasonable scenarios	exposure time are not always relevant because enveloping cases taking into account instantaneous releases can be defined.				
147.	MEX2	5.155 (f)	Specification of the structures, systems and components important to safety ~~that may be credited to reduce the likelihood and/or to mitigate the consequences of accidents.~~	Every SSC important to safety should be credited to reduce the likelihood and/or mitigate the consequences of accidents.			X	Technical precision
148.	FRA29	5.155	(h) Identification and analysis of pathways by which material that is released could be dispersed in the environment or definition of a resuspension or dispersion coefficients relevant to the phenomena involved	Resuspension or dispersion coefficients are generally used, based on testing and experience.			X	The para is addressing identification and analysis of pathways.
149.	CHN7	5.159	The safety analysis is also required to identify design extension conditions, and analyze their progression, frequency (as appropriate) and consequences: see Requirement 21 and paras 6.73–6.75 of SSR-4.	A set of design extension conditions shall be derived on the basis of deterministic analysis and engineering judgement with complementary probabilistic assessments (as appropriate).			X	Analysis of the progression of DECs includes their probabilistic assessments
150.	GER71	5.160	Design extension conditions include events more severe than design basis	Clarification		X		Change from 'events with additional failure' to 'events

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			accidents that originate from extreme events or combinations of events that could cause damage to SSCs ~~structures, systems, and components~~ important to safety or that could challenge the fulfilment of the main safety functions. The list of postulated initiating events provided in the Appendix of SSR-4 [1], including combinations of these events, should be used, as well as events ~~with~~ causing additional failures.	Please check if wording "events causing additional failures" is more appropriate here.		Design extension conditions include events more severe than design basis accidents that originate from extreme events or combinations of events that could cause damage to SSCs important to safety or that could challenge the fulfilment of the main safety functions at the reprocessing facility (see paras 5.1–5.8 of this Safety Guide). The list of postulated initiating events provided in the Appendix to		causing additional failure rejected on basis of 'technical imprecision'

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						SSR-4 [1], including combinations of these events, should be used, as well as events with additional failures.		
151.	FRA30	5.164	Analysis of design extension conditions should also demonstrate that the reprocessing facility can be brought into the state where the overall containment ~~confinement~~ function and sub-criticality can be maintained in the long term regarding the safety acceptance criteria for the design extension conditions	In the design extension conditions, the cliff-edge effects are avoided. Some of containment functions can be damaged (for low and intermediate level radioactive effluents)		X Analysis of design extension conditions should also demonstrate that the reprocessing facility can be brought into the safe state.		Clarity and Consistency with SSR-4
152.	GER72	5.173	Reprocessing facilities are required to be designed so that discharges to the environment are minimized: see para. 6.17 of SSR-4 [1]. If discharges cannot be avoided, the operating organization is required to ensure that authorized limits on such discharges ~~can~~ will be met in normal operation and in anticipated operational occurrences: see Requirement 25 of SSR-4 [1].	Clarification		X Reprocessing facilities are required to be designed so that discharges to the environment are minimized (see para. 6.17 of SSR-4 [1]). If discharges		‘Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						cannot be avoided, the operating organization is required to ensure that authorized limits on such discharges **are** met in normal operation and in anticipated operational occurrences (see Requirement 25 of SSR-4 [1]).		
153.	FRA31	5.175	(d) Filter temperature monitoring when necessary	Temperature measurements are relevant when a heating or fire hazard has been identified.		X Filter temperature monitoring, where necessary		Clarity
154.	FIN3	5.176		Please check the reference	X			
155.	MEX3	5.176	5.176. Liquid effluents to be discharged to the environment from a reprocessing facility are required to be monitored, treated and managed as necessary to reduce the discharges of radioactive material and hazardous chemicals to acceptable limits:	Reduction of discharges may need a reference or comparison level.		X Liquid effluents to be discharged to the environment from a reprocessing facility are required to be monitored, treated and managed as necessary to reduce		Consistency with SSR-4

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						the discharges of radioactive material and hazardous chemicals to as low as reasonably achievable and below the authorized limits for discharges		
156.	FIN4	5.179		Please check the reference	X			
157.	GER73	5.179	Requirements for emergency preparedness and response at nuclear fuel cycle facilities are established in Requirement 72 and paras. 9.120–9.132 of SSR- 4 [1]. The operating organization of a reprocessing facility is required to establish arrangements for emergency preparedness and response that take into account the hazards identified and the potential consequences of an emergency associated with the facility: see Requirement 72 of SSR-4 [1]. The emergency plans and procedures and the necessary equipment and provisions are required to be based on the accidents analysed in the safety analysis report: see para. 9.124 of SSR-4 [1]. The conditions under which an off-site	Clarification		X Requirements for emergency preparedness and response at nuclear fuel cycle facilities are established in Requirements 47 and 72 and paras. 6.181–6.183 and 9.120–9.132 of SSR- 4 [1]. The operating organization of a reprocessing facility is required to establish arrangements for emergency		"credible combinations" included

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			emergency response might need to be initiated include the internal hazards, ~~and~~ external hazards, and combination of them, identified as the postulated initiating events for a reprocessing facility: see paras 5.64–5123.			preparedness and response that take into account the hazards identified and the potential consequences of an emergency associated with the facility(see Requirement 72 of SSR-4 [1]). The emergency plans and procedures and the necessary equipment and provisions are required to be based on the accidents analysed in the safety analysis report(see para. 9.124 of SSR-4 [1]). The conditions under which an off-site emergency response might need to be initiated include the internal hazards, external hazards and their		

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						credible combinations identified as the postulated initiating events for a reprocessing facility(see paras 5.67–5.126 of this Safety Guide).		
158.	GER96	5.179	The conditions under which an off-site emergency response might need to be initiated include the internal hazards and external hazards identified as the postulated initiating events for a reprocessing facility: see paras 5.64–~~5123~~5.123.	editorial		X see paras 5.67–5.126 of this Safety Guide		Corrected reference
159.	ISR19	5.179	5123 has to be 5.123	Editorial		X see paras 5.67–5.126 of this Safety Guide		Corrected reference
160.	UK5	5.180/Line 1	Either The emergency plans are, or The emergency plan~~s~~ is.	Typographical error.	X			
161.	GER74	5.182	The reprocessing facility is required to be capable of being brought, in and following accident conditions, to a safe and long term stable state, in which the availability of the necessary information on the status of the facility	Suggestion for better understanding of the statement. Additionally, term “abnormal conditions” is		X During and following accident conditions, the reprocessing facility is required		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			and monitoring information is maintained ~~in and following abnormal conditions and accident conditions~~: see paras 6.15, 6.83, 6.84 of SSR-4 [1]. Control room(s) and emergency response facilities are required to be designed and located to remain habitable during postulated emergencies (e.g. with separate ventilation and with a low calculated dose in case of a criticality event): see Requirements 46 and 48 of SSR-4 [1].	being used, but not defined in IAEA Glossary and in "Definitions" of SSR-4. Do you see the possibility here to operate term, with is well defined?		to be capable of being returned to a safe and long term stable state, in which the availability of the necessary information on the status of the facility and monitoring information is maintained (see paras 6.15, 6.83 and 6.84 of SSR-4 [1]).		
162.	ISR10	6.2 and 6.3	It seems that there is some kind of inherent contradiction between the actual situation described in par. 6.2 *(large number of designers and contractors during the design, construction and early commissioning taking place simultaneously in different sections of the facility)* and the guidance in par. 6.3 (*The operating organization should consider minimizing the number of designers and contractors as far as practicable…*).	Clarity		X The operating organization should consider optimizing….		Clarity
163.	GER75	6.4	Reprocessing facilities are large and complex chemical and mechanical facilities, and, as such, modularized,	Is it the operating organization, which is expected to carry out			X	The statement is generic and is applicable to all including Operating organization,

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			standardized components should be used in their construction, as far as practicable. In general, this approach will allow better control of quality and testing, provided by the operating organization, before delivery to site. This will also aid commissioning, operation, maintenance and decommissioning.	qualification and testing? If so, please add.				suppliers, contractors etc.
164.	GER76	6.6	As far as possible, the operating organization ~~equipment~~ should ~~be~~ teste~~d~~ and ~~verified~~ verify equipment at manufacturers' workshops and/or on the site before its installation at the reprocessing facility, in accordance with a quality assurance programme that is part of the management system.	Clarification		X As far as possible, equipment should be tested and verified at manufacturers' workshops and/or on the site before its installation at the reprocessing facility, in accordance with a quality assurance programme that is part of the management system.		Clarity and technical precision.
165.	FRA32	6.6	[…] (e.g. verification of shielding efficiency, testing of neutron decoupling devices, verification of	"Criticality safety" is more appropriate here than only "criticality" (which means	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			geometry for criticality safety purposes and testing of welding) […]	"being critical")				
166.	JAP8	6.6.	As far as possible, equipment should be tested and verified at manufacturers' workshops and/or on the site before its installation at the reprocessing facility, in accordance with a quality assurance programme that is part of the management system. Testing and verification of specific structures, systems and components important to safety should be performed before construction and installation when appropriate (e.g. verification of shielding efficiency, testing of neutron decoupling devices, verification of geometry for criticality safety purposes and testing of welding), since this might not be possible or might be limited after installation.	To avoid confusion. "criticality purpose" may mean to make something critical.	X			
167.	GER77	7.4	(c) Any modifications to findings of a safety assessment and a statement of confidence in these findings (i.e. ~~the~~ safety case) for the facility as a result of commissioning.	As this is the first time term "safety case" is used, we suggest to add additional explanation.			X	'Safety case' is defined in IAEA glossary
168.	FIN5	7.6		Please check the reference	X			
169.	GER78	7.8	The controls should include a process for verification that all such temporary works have been finished and devices	Clarification		X The controls should include a process		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			have either been removed at the end of commissioning or are properly approved to remain in place (i.e. as a modification: see paras 8.45–8.54) with appropriate safety assessment carried out and its results included in the safety case for operation.			for verification that all temporary works have been completed and devices have either been removed at the end of commissioning or are properly approved to remain in place (i.e. as a modification: see paras 8.44–8.53 of this Safety Guide) with an adequate safety assessment performed and the results included in the safety case for operation.		
170.	GER79	7.13	Clear communications between management, supervisors and site personnel and between and within different shifts of personnel under all operational states and accident conditions ~~normal and abnormal circumstances~~ and with the relevant emergency services is a vital	Is it possible to put the formulation in line with IAEA Safety Glossary here?	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			component of overall facility safety.					
171.	GER80	7.24	In this stage, operating personnel should take the opportunity to further develop and finalize the operational documentation and to learn the details of the systems. Such operational documentation should include procedures relating to the operation and maintenance of the facility and those relevant to any anticipated operational occurrences, including emergencies. Leak-tightness in the facility and the stability of control systems are best tested at this stage.	Clarification Is leak tightness of control systems meant here, or - more general – in the facility? Please verify.		X The leaktightness of containment systems (e.g. cells, glove boxes, process vessels and piping) and the stability of control systems should be tested at this stage.		Clarity
172.	IND2	Page No.55; Section 7.47.	"Any major /notable deviation in the findings of the commissioning tests should be brought out along with corrective measures in the commissioning report".	The sentence can be considered for inclusion as bullet point 7.48		X Added "The commissioning report should highlight any notable deviation in the findings of the commissioning tests along with corrective measures taken" in 7.43.		Clarity
173.	GER81	8.3	The organization of a reprocessing facility should be arranged so as to ensure that the responsible person for	Please change to "responsible person", as "authority" could be		X The organization of a reprocessing		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			the safe operation of the facility ~~appropriate authority~~ is always present on the site, …	understood as "regulator", "regulatory authority"		facility should be arranged so as to ensure that a person responsible for the safe operation of the facility is always present on the site….		
174.	GER82	8.5	A safety committee in a reprocessing facility (see Requirement 6 of SSR-4 [1]) is required to be established prior to active commissioning: see para. 4.30 of SSR-4 [1].	Editorial	X			
175.	GER83	8.11	The need for training all levels of management should be considered. Personnel involved in the management and operation of the facility should understand the complexity and the range of hazards present at the reprocessing facility at a level of detail consistent with their level of responsibility. Certain operating positions may require formal authorization or a licence.	Reminder that certain operating positions may require formal authorization or a licence might be important here.		X As stated in para. 9.38 of SSR-4 [1], "Certain operating positions may require formal authorization or a licence."		Clarity
176.	ISR11	8.13	We suggest to mention use of (control room) **simulators** in the list of the training options listed following paragraph 8.13.	Completeness			X	Covered in para 8.21
177.	ISR12	8.16	Same comment as for par. 4.7	Completeness	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			(comment no. 3, above).					
178.	GER84	8.19	The management system should specify lines of responsibility and authority and lines of communication ~~the authority and responsibilities~~ at each management level.	Clarification			X	The para is clear as is.
179.	GER85	8.19	The authority to make operating decisions should be assigned to suitable levels of management, depending on the operational limits and conditions, the operational sub-limits and the potential safety implications of the decision. The management system should specify the authority and responsibilities at each management level. If a sub-limit or an operational limit or condition is exceeded, the appropriate level of management should be informed and the regulatory body should be notified, if required (see also paras 9.34 and 9.35 of SSR-4 [1]). The circumstances that would necessitate an immediate decision or action for safety reasons should be defined, as far as practicable, in procedures developed in accordance with the management system. The appropriate shift staff or day staff should be trained and authorized to	Paras 9.34 and 9.35 of SSR-4 [1] are also about notification of regulatory body. We suggest to add.			X	Paras 9.34 and 9.35 of SSR-4 are already mentioned .

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			make the necessary decisions, and take the necessary actions, in accordance with these procedures.					
180.	GER86	8.21	All limits and conditions for a reprocessing ~~plant~~ facility should be clearly and consistently identified in operating procedures and in directly relevant procedural steps. ~~Consideration should be given to classifying procedures in accordance with their safety significance (i.e. using a graded approach).~~ Operating procedures should apply comprehensively for normal operation, anticipated operational occurrences and accident conditions, in accordance with the policy of the operating organization and the requirements of the regulatory body.	Please put in line with Requirement 63 of SSR-4. Classifying of procedures in accordance with their safety significance using a graded approach is not foreseen in SSR-4. If an intention of this para is different, please make the formulation more precise and clear.		X The text "All limits and conditions for a reprocessing facility should be clearly and consistently identified in operating procedures (See requirement 63 of SSR-4 [1]) and in directly relevant procedural steps.." Is now included at the end of 8.18 Also Section 8.21 starts with "Operating procedures for the reprocessing facility are required to be developed (see Requirement 63 of SSR-4 [1]). These		Clarity and consistency with SSR-4

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						procedures should be developed to directly control all process operations at a reprocessing facility. These procedures should be user-friendly and should cover all modes of operation of the facility, including ramp-up and ramp-down."		
181.	GER87	8.35	Maintenance (and any preparatory operations) that involves temporary changes to confinement and/or shielding should always be thoroughly analysed beforehand, including any temporary or transient stages, to ensure that levels of contamination and occupational exposures will be acceptable. The analysis should specify appropriate protection measures and monitoring requirements *(see paras 8.70 and 8.71).*	Is reference to paras 8.70 and 8.71 correct here? Please check	X			
182.	GER88	8.42	(f) Minimizing human performance factors that may lead to premature degradation, through enhancement of staff motivation, fostering of safety	Clarification		X (f) Minimizing human performance factors that could		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			culture ~~sense of ownership and awareness,~~ and understanding of the basic concepts of ageing management;			lead to premature degradation, through enhancement of staff motivation, fostering of a culture for safety, including sense of ownership and awareness, and understanding of the basic concepts of ageing management;		
183.	FRA33	8.45	Requirement 61 of SSR-4 [1] states that "The operating organization shall establish and implement a programme for the control of modifications to the facility." The management system of a reprocessing facility should include a standard process for all modifications (see para. 3.20). A work control system, quality assurance procedures and, if necessary, appropriate testing procedures should be used for the implementation of modifications (including temporary modifications) at a reprocessing facility	Some changes (e.g. documentary or organizational) do not require testing procedures		X …A work control system, quality assurance procedures and appropriate testing procedures as necessary, should be used for the implementation of modifications (including temporary modifications) at a		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						reprocessing facility.		
184.	FRA34	8.47	Proposed modifications should be reviewed in detail, and be subject to approval by, qualified and experienced persons to verify that the arguments used to demonstrate safety are suitably robust. This is considered particularly important if the modification could have an effect on ~~criticality~~ safety.	Safety encompasses all risks, including those with regard to criticality			X	The intent of the second sentence is additional emphasis on modifications impacting criticality safety.
185.	FRA35	8.49	For those that potentially impact the safety and existing dispositions, the safety committee is required to review the proposed modifications: see para. 4.31(d) of SSR-4 [1].	Review required for substantial and significant modifications requiring authorization		X The safety committee of a reprocessing facility is required to review any proposed modifications that might have significance for safety		Clarity
186.	GER99	8.50	The modification should also specify which documentation and training will need to be updated because of the modification (e.g. training plans, specifications, safety assessment, emergency plans, notes, drawings, engineering flow diagrams, process	We suggest adding emergency plans to the list. Some modifications could have an impact on the emergency plans and procedures.	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			instrumentation diagrams and operating procedures).					
187.	MEX4	8.52	N/A	Possible nuclear security affectations mentioned in this paragraph should be considered from the early design stage, with further mention to modifications. Cooperation from specialists in safety and security is mentioned several times but the guide could also recommend ways to determine the optimal amount of access control points in the early design stage in order to comply with requirement 75 of SSR-4.			X	The requested guidance is not in the scope of this safety guide.
188.	GER89	8.53	The modifications made to a reprocessing facility (including those to the operating organization) should be reviewed on a regular basis to ensure that the cumulative effects of a number of modifications with minor safety significance do not have unforeseen effects on the overall safety of the facility. This should be part of (or additional to) periodic safety review or	Clarification		X This should be part of (or additional to) periodic safety review or an equivalent safety assessment process.		clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			an equivalent safety assessment.					
189.	GER90	8.56	(d) Management of moderating materials, particularly hydrogenated materials, where moderation control is ~~used~~ carried out; …. (f) Management of mass in transfers of fissile material, where mass control is ~~used~~ carried out;	The statement is not clear enough. Perhaps wording "control is carried out" suits better?		X (d) Management of moderating materials, particularly hydrogenated materials, where moderation control is performed (f) Management of mass in transfers of fissile material, where mass control is performed;		Clarity
190.	FRA36	8.56	(g) Management of reagents/fluids that may cause a dilution of a liquid poison and/or the precipitation of fissile material, where poison or concentration control is used;	Consistency with Paragraph 5.55 where a focus is made on poison and concentration controls. Both aspects should appear in 8.56.		X (g) Management of reagents/fluids that may cause a dilution of a liquid poison and/or the precipitation of fissile material, where poison or concentration		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						control is performed;		
191.	UK6	8.58/Line 2	‘,,, care should be taken to allow for ~~the~~ any uncertainties …’	Typographical error.	X			
192.	UK7	Sub-heading between paras. 8.62 and 8.63	RADIATION ~~PROTECTIONAT~~ PROTECTION AT REPROCESSING FACILITY	Typographical error.	X			
193.	GER91	8.63	RADIATION PROTECTION~~AT~~ AT REPROCESSING FACILITY 8.63. The requirements for radiation protection in operation of a nuclear fuel cycle facility are established in Requirement 67 and paras 9.90–9.101 of SSR-4 [1]. General requirements for radiation protection are established in ~~Part 3 of and~~ GSR Part 3 [7];	Editorial	X			
194.	GER92	8.65	(a) Assignment of responsibilities (decision making, corresponding organizational arrangements, including itinerant workers, ~~advisory~~ safety committee);	Please put in line with Requirement 6 of SSR-4 and para. 3.26 of this Safety Guide: “safety committee (or an advisory group)”	X			
195.	ISR13	8.95	We suggest to add a recommendation for “guided” reading of the MSDS (Material Safety Data Sheets) of the process chemicals used at the plant.	Completeness			X	The requested guidance is not in the scope of this safety guide.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
196.	IND3	Page no. 67 Para 1 Line 2 Section (8.81)	… necessary, prior to ~~their~~ leaving their contamination zones	Editorial		X Personnel and equipment should be checked for contamination before leaving contamination zones and decontaminated as necessary		Clarity
197.	GER97	8.83	(b) Preparatory activities to optimize individual and collective doses, including: (v) training of workflows and procedures in order to practice routines and to minimize radiation exposure	We suggest to add the training of the working procedures. With well practiced work procedures in advance, the time in operation is minimized and thus the radiation exposure of the personnel.		X (v) The training of personnel on workflows and procedures in order to practise routines and to minimize radiation exposure.		
198.	GER93	8.84 A New para	Requirement 37 of SSR-4 [1] states: "Equipment shall be provided at the nuclear fuel cycle facility to ensure that there is adequate radiation monitoring in operational states, in design basis accidents and, if appropriate, in design extension conditions."	Numbering of para is missing	X			
199.	GER100	8.93	In the reprocessing facility and analytical laboratories, the use of	We suggest adding the protection clothing to the		X Where necessary,		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All			Date: 2 November 2022		RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			chemical reagents should be controlled by written procedures to prevent explosion, fire, toxicity and hazardous chemical interactions. These procedures should identify the nature and quantities of authorized chemicals. Where necessary, eye protection, protective clothing (e.g. lab coat, gloves) and local ventilation should be specified and provided.	list. Lab coat and gloves should be considered when handling chemicals.		local enclosures and ventilation and personal protective equipment should be specified and provided.		
200.	JAP9	8.103.	To ensure the efficiency and operability of fire protection systems, suitable procedures, training, exercising and drills are required to be implemented: see para. 9.109 of SSR-4 [1]. This includes the following: (a) Periodic testing, inspection and maintenance of the devices associated with fire protection systems (fire detectors, extinguishers and fire dampers); (b) General and detailed (location specific) instructions and related training for firefighters; (c) Firefighting plans; (d) Fire drills, including the involvement of off-site emergency services;	To keep a consistency with SSR-4.		X To ensure the efficiency and operability of fire protection systems, suitable procedures, training and exercises are required to be implemented		Consistency with SSR-4

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			(e) Training for operating staff and emergency workers.					
201.	FIN6	8.118		Please check reference	X			
202.	GER94	8.119	The operating organization should establish a list of performance indicators to assist in the monitoring and review of the programmes for minimization of discharges. The indicators should be related to maximum upper limits, e.g. monthly ~~goals~~ limits for discharges to the environment.	Do we have goals for discharges? "Limits" suit better		X The operating organization should establish a list of performance indicators to assist in the monitoring and review of the programmes for minimization of discharges. The indicators should be established in relation to maximum upper limits, for example, monthly goals for discharges to the environment.		Clarity
203.	GER98	8.128	8.128. Clear communication protocols are required to be established with local authorities and response organizations: see para. 5.43 of GSR Part 7 [19]. 8.129. Arrangements shall be made to provide the public with instructions,	We suggest adding this paragraph. Communication about potential hazards in an emergency should not be limited to staff and authorities.		X Requirement 10 of GSR Part 7 quoted in text.		Clarity and style.

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			warnings and relevant information for emergency preparedness and response (see Requirement 10 GSR Part 7 [19]).					
204.	GER95	8.129	The operating organization is required to ensure availability of personnel with specific expertise on the nature and extent of hazards in facility as well as availability and reliability of all supplies, equipment, communication systems, plans, procedures and other arrangements necessary for effective response in an emergency: see paras. 9.128, 9.129 and 9.132 of SSR-4 [1]. The operating organization and response organizations should develop analytical tools that may be used early in an emergency response for supporting decision making on protective actions and other response actions in due recognition of the limitations of such analytical tools and in a way that would not reduce the effectiveness of response actions: see para. 6.21 of GSR Part 7 [19].	Clarification			X	Removed the text on limitations as the same is given in para. 6.21 of GSR Part 7
205.	MEX5	8.134	The programme for the feedback of operational experience at a reprocessing facility is required to cover experience and lessons ~~learnt~~	Include requirements from para 9.135 of SSR-4 about reporting all significant safety events and their	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			learned from events (including low-level events) and accidents at the facility as well as from other nuclear installations worldwide: see para. 9.133 of SSR-4 [1]. Lessons from relevant events at other (i.e. non-nuclear) facilities should also be considered. This programme should include the evaluation of trends in operational disturbances, trends in malfunctions, near misses and other incidents that have occurred at the reprocessing facility and, as far as applicable, at other nuclear installations. The programme is required to include a reporting system and consideration of technical, organizational and human factors: see para. 9.134 and 9.135 of SSR-4 [1].	learned lessons. Not only those which are related to operational limits conditions. (8.20 SSG-42). As a suggestion Use "learned" instead of "learnt" for consistency in the wording throughout the document.				
206.	ISR14	Title of Section 9.	We suggest to add: …"and for Prolonged Shutdown State Prior to Decommissioning" to the title of Section 9. This will probably better reflect the content and essence of the technical content of this section.	Completeness			X	Consistency with SSR-4
207.	UK2	Section 9	Please move para. 9.4 to the start of Section 9 and add to/amend (shown in red) the text as follows:	It is very important that the hazardous (and corrosive) inventory is removed as soon as practicable after		X At the end of facility operations, either planned or		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			'At the end of facility operations, either planned or unplanned, the facility should be safely shutdown with the hazardous inventory and corrosive materials being removed as far as practicable. For planned shutdown, operational experience gained via through-life inspection regimes should be used to ensure that the facility has sufficient remnant life to support safe post operational clean out (POCO). For unplanned shutdown a reduction of the hazardous inventory should be undertaken on a best endeavours basis. This will help to minimize risks and as far as practicable to make the facility passively safe (for example by removing the need for active cooling). Such changes should support simplification of the facility safety case and reduce the burden associated with care and maintenance' '~~For any~~ During the period between ~~a planned or unplanned~~ shutdown and ~~prior to~~ decommissioning ~~starting~~, appropriate safety measures are required to be retained/provided ~~implemented~~ to facilitate effective monitoring and to enable ~~maintain~~ the	the cessation of operations. This will minimise time at risk and help ensure that required equipment remains available. UK believes that this should be stated upfront within this section to highlight the importance before describing decommissioning plans. This will move the facility to a more passively safe state and should simplify operational and maintenance requirements, and the safety case, whilst awaiting decommissioning. For aged facilities/sites this should also maximise the potential for interfacing facilities and infrastructure to be available to support safe washout and POCO. In the		unplanned, the facility should be safely shutdown with the hazardous inventory and corrosive materials being removed as far as practicable. The operational experience gained through the ageing management programme should be used to ensure that the SSCs in the facility have sufficient residual life to support safe post-operational cleanup. During the period between shutdown of operations and decommissioning, the implications for safety of the reprocessing facility are required to be assessed and managed (see para.		

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			reprocessing facility to be maintained in a safe and stable state. The required safety measures will be dependent upon the success of inventory removal, washout and POCO, but could include ~~including~~ measures to prevent criticality, the spread of contamination and fire, and to maintain appropriate radiological monitoring: see para. 10.9 of SSR-4 [1]. The need to revise the safety assessment for the facility in its shutdown state is also required to be considered. The application of knowledge management methods to retain the knowledge and experience of operating personnel in a durable and retrievable form should also be considered. ~~Wherever practicable, hazardous and corrosive materials should be removed from process equipment to safe storage locations before the reprocessing facility is placed into a prolonged shutdown state.~~'	UK these factors were a key part of the decision when to halt reprocessing operations. Overall, this will help to ensure that risks are reduced as far as reasonably achievable and as soon as possible.		10.9 of SSR-4 [1]). Safety measures should be implemented, as appropriate, to maintain the reprocessing facility in a safe and stable state, including measures to prevent criticality and the spread of contamination and fire, and to maintain appropriate radiological monitoring The need to revise the safety assessment for the facility in its shutdown state should be considered. The application of knowledge management methods to retain the knowledge and experience of operating personnel		

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
						in a durable and retrievable form should also be considered.		
208.	ISR15	Table of CONTENTS	a) In the table of CONTENTS, line number 12 in the subsections list of Section 8, "a**T**" has to be "**at**"		X			
209.	FRA37	References – [3]	INTERNATIONAL ATOMIC ENERGY AGENCY, Criticality Safety in the Handling of Fissile Material, IAEA Safety Standards Series N0. SSG-27 (Rev. 1), Vienna (~~2009~~ 2022). ~~(A revision of this publication is in preparation.)~~	Rev.1 of SSG-27 has been published in 2022	X			
210.	ISR21	REFERENCES	The validity of the remark "publication in preparation" for reference [25] has, of course, to be checked before publication of the present Guide.		X			
211.	ISR20	ANNEX I Fig. I-1	Title of Fig. I-1 is on the page following the figure itself		X			
212.	IND4	Page no. 85 Annex II /Table II-1	Table needs to be modified as below: (Process area: Clarification)	During the event "Potential release of radioactive material" on Filter cleaning/centrifuge	X			

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		Row no. 5	Potential release of radioactive material (safety function initially challenged) ~~2b~~ 3	cleaning systems; safety function initially challenged considered as "2b". Which denoted for "Cooling and the removal of decay heat" (as mentioned in page 84). Correct safety function initially challenged in this case should be "3" which is "Protection against radiation exposure"				
213.	RUS17	Annex II	Table II-1 seems more detailed and comprehensive in comparison with Table II-2. So, Table II-2 is recommended to be revised to make it more informative and compatible with Table II-1.	The information given at Table II-2 does not seem comprehensive and specific enough. For instance, for high level liquid waste concentration process area only explosion (red oil) and overpressure are considered as events (criticality event and radiation exposure are not considered).			X	A reference is made in Table II-2 to applicable aspects from table II-1 to avoid repletion. Applicable aspects including the suggested aspects are covered through such cross referencing.
214.	FRA38	Ann. II Table II-1	Clarification / Criticality event / Plutonium mass	For the clarification stage, mass is also a controlled			X	Covered as part of vessel (last row)

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All Date: 2 November 2022					RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
				parameter (not only H/Pu, applicable after the clarification device - centrifuge)				
215.	IND5	Page no. 88 Annex II /Table II-2 Row no.3	Table needs to be modified as below: (Process area: Solvent regeneration) For Temperature control system Explosion (hydrazine) 2c Fire (organic material) 2a	Fire denoted with 2a in many places in mentioned table. It could not be 2c and needs to be mentioned as 2a separately, in line with other places in same table.	X			
216.	PAK1	5.13	j) Degradation of process instruments	New bullet may be added as process instruments can also be degraded due to high temperature and pressure. This can lead to malfunctioning and wrong readings of vital parameters such as radiation levels		X (j) Degradation of process instrumentation.		Clarity

COMMENTS BY REVIEWER Reviewer: All Country/Organization: All				Date: 2 November 2022	RESOLUTION			
No.	Country	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
217.	PAK2	5.145 (g)	Training of operators on procedures to be followed for normal, ~~and~~ abnormal and Accident conditions	Scope of training may also include contingency procedures and accident management guidelines also.		X The training of operating personnel on procedures to be followed in operational states and in accident conditions		Clarity and consistency with safety standards
218.	PAK3	8.45 line 3	…. The management system of a reprocessing facility should include a standard process for all modifications including configuration control (see para 3.20)	Configuration control is missing which is important during commissioning and operation stages.		X The management system of a reprocessing facility should include a standard process for all modifications, including modification of configuration control (see para. 3.20).		Clarity