Draft Safety Guide
***DS 509* "The Operating Organization and the Recruitment, Training and Qualification of Personnel for Research Reactors" *(Revision of NS-G-4.5)* Step 7**

COMMENTS BY REVIEWER Reviewer: Country/Organization:				Page. Date: 07 November 2019	RESOLUTION			
Comment No.	Country Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/ rejection
General								
1.	Germany 1	General	General note to the whole document	Numbers of Paras are often missing, it is therefore difficult to build a table of comments	X			
2.	Poland 6	General – whole document	"Requirement 68: Structure and functions of the operating organization" from SSR-3 has not been mentioned and expanded on in the guide. It talks about knowledge management and roles of personnel; therefore, it might be useful to cover this topic more deeply in the guide.				X	Structure of the organization is covered in Chapter 2, paras 2.11 to 2.24. Functional responsibilities are addressed. Consistent with DPP509 revision by amendment.
3.	Korea 1	Contents	Propose to insert the number of relevant paragraph in contents as follows: Background (1.1-1.5) Objective (1.6)	Propose the unified format of Contents for the uniformity and consistency with other Safety Guides.	X			

Section 1								
4.	Korea 2	1.3	1.3. Two further IAEA Safety Standards Series publications have been reviewed and adopted~~used~~ in the preparation of …	It is preferred to use reviewed and adopted rather than 'used' when safety guide is developed.			X	Editorial. Accepted language in other guides.
5.	South Africa 1	1.3, Page 4	Last Sentence: "Many of the"	Editorial: This sentence seems to be incomplete.	X			
6.	Germany 2	Para after 1.5 1.5A (new item) Line 4	[…] Specific arrangements for different research reactor facility types and different operating situations may be derived from this general guidance.	We suggest "research reactor facility" in accordance to SSR-3	X			
7.	Korea 3	1.6	Objective 1.6. The objective of this Safety Guide is to provide general guidance both on … derived from this general guidance. ~~1.6.~~ The target audience for this Safety Gide includes …	The number of section shall be added for this part and the content of previous para 1.6 shall be included in new para 1.6.	X			
8.	Korea 4	1.7 1.9	1.7. …. The focus of this Safety Guide~~publication~~ is mainly on … 1.9. … This variety of characteristics means that recommendations in this Safety Guide~~publication~~ can only be	'Publication' and 'Safety Guide' are used simultaneously. It is preferred to use 'Safety Guide' rather than 'publication' when this is used to address the content of recommendation itself. Publication may be used to	X			

			…	compare other IAEA publication with Safety Guide.				
9.	Korea 5	1.7	1.7. … The level of detail in the organizational structure and staffing may therefore be substantially reduced by graded approach in paras 2.15-2.17 of SSR-3 [2]~~for low power research reactors, for reactors with limiting characteristics (e.g.…)~~, …	Power level and/or characteristics of research reactor are one of factors to be considered for the graded approach. Therefore it is appropriate to refer graded approach in general. The description in (e.g. …) is too specific.			X	The guidance applies in the context of the previous sentence about reactors having power levels up to tens of megawatts
10.	Korea 6	1.10	Delete the footnote 3 regarding graded approach. 1.10. … (see paras 2.15-2.17 of SSR-3 [2]~~Ref. [2]~~). …	It is preferred to refer the relevant paragraph obviously and precisely.		X		Paras 2.15 to 2.17 of SSR-3 added but footnote retained as it provides useful additional guidance
11.	Korea 7	1.10	Propose to insert below sentence in para. 1.10. 'Each case in which the application of recommendation is graded shall be identified, with account taken of the nature and possible magnitude of the hazards presented by the given facility and the activities conducted.'	In order to clarify the graded approach concepts, safety guide have to address that background and rationale shall be identified and justified when the graded approach is applied to the facility and activities under consideration. (we can find a good example in the revised para 1.4 of SSG-37)	X			
Section 2								

12.	Korea 8	2.1, 2.69, 2.70, 2.73, 2.74, 2.77, 2.78, 2.79, 2.80, 2.82, 2.83, 2.85, 2.86, 2.87, 2.88, 2.90, etc.	~~Requirement 2: Responsibilities in the management for safety~~ ~~"The operating organization … from regulatory control."~~ The Requirement 2 of SSR-3 [2] states that "The operating organization … from regulatory control."	Propose the unified format of referring the Requirement of SSR-3 in paragraph of each Safety Guide for the uniformity and consistency with other Safety Guides.			X	The approach is consistent with other safety guides where the overarching requirement is included with the operative paragraph.
13.	Korea 9	2.1 (f)	(f) … (Para 4.1 of SSR-3[2]~~SSR-3 [2], para 4.1~~).	Unified format of referring the requirements and/or paragraph of SSR-3 is necessary, for example, paras 2.6-2.7 in Requirement 1 of SSR-3, paras 2.6-2.7 of SSR-3, and Requirement 3 of SSR-3.			X	The format is in accordance with guidance from the standards specialists.
14.	Germany 3	After Req.67 Page 9	The operating organization shall establish an appropriate management structure for the research reactor facility and shall provide ~~for~~ all necessary infrastructures for the conduct of reactor operations.	Clarification in accordance to SSR-3			X	The text is quoted from para 7.2 of SSR-3.
15.	Korea 10	2.6	2.6. Relevant requirements in Ref. [2] for the organizational plan shall be~~are~~ established ~~in Ref. [2]~~.	Correct the typo error			X	The requirements are already established in [2].
16.	Germany 4	2.11 (a), footnote 6	[6] The International Nuclear Safety Group (INSAG) defines five levels of defence in depth: – Level 1: Prevention of abnormal operation and failures;	Text to Level 5 belongs to the footnote 6, and not to the text of Para. 2.11	X			

			– Level 2: Control of abnormal operation and detection of failures; – Level 3: Control of accidents within the design basis; – Level 4: Control of severe plant conditions, including prevention of accident progression and mitigation of the consequences of a severe accident; ~~(b)~~ Level 5: Mitigation of the radiological consequences of significant external releases of radioactive material.					
17.	USA 1	2.15	~~In this case, t~~The on- site organization should be capable of ~~immediately~~ rendering all services that may be necessary before off-site support is available.	Preserves the original meaning of the sentence, which is that the on-site organization needs to be able to provide all services that are necessary before off-site support is available.	X			
18.	Germany 5	2.16 Line 6	[…] ~~In some Member States,~~ A brief description of the key positions (e.g. reactor manager, senior reactor operator, reactor operator, radiation protection officer, reactor maintenance personnel) and provisions for delegation of their authority should be included in the section of the operational limits and conditions that establishes administrative requirements.	The responsibilities of the key positions are an important organizational factor and should be part of the OLC's.			X	This is not the case in some Member States.

19.	Germany 6	2.18	Proposed changes to staffing levels, ways of working or the organizational structure should be subject to analysis and independent review prior to their implementation.	Analysis and review should be done prior to implementation	X			
20.	Canada 2 EPReSC	2.63	… An emergency plan with procedures for its implementation should be prepared, in accordance with the requirements in IAEA Safety Standards Series No. GSR Part 7, Preparedness and Response for a Nuclear or Radiological Emergency. These procedures should cover on-site and, where necessary, off-site responses, including the timely notification of appropriate government, regulatory and support organizations.	Clarity. Add an explicit reference to GSR Part 7.	X			
21.	Germany 7	2.70	For safe operation of the research reactor facility, operational limits and conditions should be established, based on safety analysis, that include administrative controls and requirements for operating procedures.	Further specification		X the research reactor facility...		The text is coherent with para 6.25 of DS497C Rev NS-G-2.4.
22.	Germany 8	2.72	Shift turnover should follow a prescribed routine to ensure that critical information, such as	Please use the same term	X			

			reviews of logbooks and log sheets, operations in progress, equipment out of service and experiments using the reactor, is passed from one shift ~~crew~~ to another. This applies to continuous operations where one shift relieves another in a routine manner, to emergencies and to situations where one shift ~~crew~~ secures the reactor and another shift ~~crew~~ resumes operation later.					
23.	South Africa 2	"Operating Procedures "Pages 25 and 26	"Operating procedures for research reactors shall be developed that apply comprehensively (for the reactor and its associated facilities) for normal operation, anticipated operational occurrences and accident conditions, in accordance with the facility design philosophy, principles of defense-in-depth, policy of the operating organization and the requirements of the regulatory body."	The Operating Procedures must also be consistent with the design of the facility and include defense-in-depth features in its design to handle NO, AOO and accident conditions. It cannot only be based on the policy of the operating organization and the requirements of the regulatory body since it may lack adequate description of the design.			X	The text is coherent with Req 74 of SSR-3 and DS497C Rev NS-G-2.4.
24.	Poland 1	2.73	Pages 25-27 It would be more cohesive to put the guidance for commissioning before the guidance for operating procedures	Clarification			X	Retained for consistency in accordance with DPP509. Also, procedures are required before commencement of commission.

25.	Poland 2	2.76	Page 27 “Emphasis should be placed on examination of ~~critical~~ systems, *structures* and components *critical for safety* such as the primary coolant system of the reactor”	Clarification			X	The text is coherent with para 6.41 of DS497C Rev of NS-G-2.4 for NPPs
26.	Canada 3 EPReSC	2.79	The operating organization should establish an emergency plan, and procedures for its implementation, in accordance with the requirements in GSR Part 7 [15], that includes…	Clarity. Add an explicit reference to GSR Part 7.	X			
27.	Turkey 11	2.79 (a)	This expression can be written as "(a) The ability to identify, characterize and classify emergencies".	Classification of the emergencies is very crucial in terms of prompt and valid application of the emergency plans and procedures.	X			
28.	Turkey 12	2.79 (b)	This expression can be written as "(a) Maintenance of emergency equipment and emergency management centres and points".	The emergency management centres and points should be operable during the emergencies and maintenance of them is very important in terms of operability.			X	Maintenance of emergency equipment is consistent with para 7.93 of SSR-3.
29.	Turkey 13	2.79 (d)	This expression can be written as "(a) Timely notification and alerting of off-site authorities and emergency response personnel".	Prompt notification and alerting of off-site authorities is very important in terms of effective implementation of emergency response.		X ... alerting of emergency response personnel, and off-site authorities as appropriate;		Some research reactors may not need off-site response. Emergency response personnel will determine if off-site response is needed.

30.	South Africa 3	2.80	"Records and reports". Page 29The text in paragraphs 2.80 and 2.81 does not speak mainly to Records and Reports, but to Document Management.	Proposal: Add some text to paragraphs 2.80 and 2.81 in order to reconcile the title and text of this paragraph.		X		Additional text on records and reports added in 2.81B
31.	Poland 3	2.82	It might be useful to add that *the results of analysis of operating experience should be shared with operating personnel to enhance safety culture within organization*.				X	Agree but already covered in "should be shared with peers to prevent recurrence".
32.	South Africa 4	2.87, Page 32	2.87. Security measures and safety measures should be designed and implemented in an integrated manner so that they do not compromise each other, including ~~in~~:	Editorial: Remove "in" to improve the grammar	X			
33.	South Africa 5	2.87, Page 33	ageing management; and, extended shutdown	Editorial: Delete comma to improve grammar	X			
34.	Germany 9	2.89	The operational limits and conditions, which are sometimes contained in a document separate from the safety analysis report, should also be reviewed periodically and should be updated on the basis of experience <u>feedback</u> and the updating of the safety analysis report.	Bringing in accordance with Para. 2.82 of current document	X			
35.	USA 2	Para. 2.91	(b) Identification and understanding of ageing degradation mechanisms; ~~(c) Minimization of ageing~~	Ageing degradation does not need to be minimized or even controlled in some cases, but instead should be limited to		X (b) Identification and understanding of degradation		The list has been revised to be consistent with ageing management

			~~degradation;~~ ~~(d)~~ (c) Detection, monitoring and trending of ageing degradation; ~~(e)~~ (d) Procedures for limiting ~~Mitigation of~~ ageing degradation to acceptable levels; (f) Continuous improvement of the ageing management programme;	an acceptable level to ensure SSCs remain operable and can perform their intended safety functions. For example, it might be more practical to monitor ageing degradation and then replace a component than to try to prevent the ageing degradation. The safety guide on ageing management for research reactors should be consistent with this.		mechanisms; (c) Minimization of ageing effects; (d) Detection, monitoring and trending of ageing effects; (e) Mitigation of ageing effects; (f) Acceptance criteria (g) Corrective actions (h) Continuous improvement of the ageing management programme; (i) Record keeping.		guidance in Rev of SSG-10. Revisions will be harmonized across the set of guides.
Section 3								
36.	USA 3	Para. 3.11	In all cases, the shift supervisor should have demonstrable ~~management~~ supervisory skills. Since the shift supervisor will supervise other licensed reactor operators, the incumbent should be a senior reactor operator.	Para. 3.8 lists “supervisory” skills as one of the management skills. This helps to differentiate between the demonstrable skills of the reactor manager and those of the shift supervisor to avoid the misunderstanding that the reactor manager and the shift supervisor need the same	X			

				management skills.				
Section 4								
37.	Germany 10	4.6	Although some of the required competences will be common to all positions, the operating organization should design, develop and implement separate initial and continuing training programmes for each specific position.	Clarification			X	Redudent
38.	USA 4	Para. 4.15	operating personnel with direct responsibility for the safe operations of the facility, including ~~(e.g.~~ the reactor manager, shift supervisors, senior reactor operators and reactor operators~~)~~ should ~~provide~~ possess a thorough	The list of operating personnel with responsibility for safety should include senior reactor operators. Grammar.		X The training programme...should provide		
39.	Germany 11	4.18	It is common practice for research reactor facilities to supplement the general employee training programmes by developing initial training programmes for qualifying operating personnel that are specific to the position held. The extent, scope and depth of these specific programmes will depend on the size and complexity of the facility and on the impact on the public and on the environment that may result	Definitions of a “very small and simple facility”, as well as of a “large, complex and highly used” one are not available in Safety Guides (neither in SSR-3, nor in “IAEA Safety Glossary 2018)			X	Useful guidance for embarking organizations to benchmark training.

			from its operation. The duration of the training will be strongly dependent on the initial competence of the incumbent. ~~For a very small and simple facility, training, including site specific training and on the job training, may typically be completed in three months. For a large, complex and highly used facility, the training programme will be more extensive and may require over a year to complete.~~					
40.	USA 5	Para. 4.19	for ~~al~~ all research	Typo.	X			
41.	Germany 12	4.19 (f) (iv)	*Performance of critical experiments (or verification of subcriticality ~~subcritical multiplication~~ for subcritical assemblies);	In case of subcritical assemblies tests are also required	X			
42.	South Africa 6	Paragraph underneath 4.19 (h), page 47	It is important to note that the background and refresher courses should be of similar contents for al research reactors; however, the facility-specific training could be subjected to the competency of the operating personnel, use of a graded approach depending on the facility's potential hazard, technology adopted, and specific design.	Add text since this is also a contributing factor to facility-specific training			X	Competency is addressed in 4.18. Addition not consistent with DS497F Rev NS-G-2.8 for NPPs.
43.	Germany 13	4.21	For the position of senior reactor operator, consideration should be given to experience, leadership	Mistake by reference, please verify. The same for Para. 4.40	X			

			and communication skills. In addition to the training described in paras 4.19–~~4.21~~, …					
44.	Germany 14	4.32	Once training is completed, operating personnel should be assessed by the reactor manager, or by a qualified person designated by the reactor manager, ….	Such a person must be qualified	X			
45.	Pakistan 1 WASSC	4.37	Please include training on radioactive waste management as part of the continuing training programme.	Training on radioactive waste management may be included as per Section 3.25 of IAEA SSG-40.			X	The list in 4.37 is not meant to be exhaustive. This is also not included in NPP guide Rev NS-G-2.8.
46.	Germany 15	4.37 New item.	[…] (b) Nuclear safety in design and operation.	In the list the topic nuclear safety is missing.		X Nuclear Safety Principles		
47.	Germany 16	4.37 A New item	Additional trainings, emphasizing supervisory aspects of personnel with responsibilities, should be followed on a regular basis by successive continuing additional training programmes as well.	Personnel, mentioned in Paras 4.20 and 4.21, should be covered with follow-up additional training as well		X Personnel with supervisory responsibilities (see 4.20 and 4.21) should undergo continuing trainings, emphasizing supervisory aspects.		
48.	Poland 4	4.40	**4.40.** In addition to the training topics recommended in paras 4.38 and **4.40** – *those references need revising*		X			

Section 5								
49.	Poland 5	5.2	5.2 as well as 2.48 are repetitions of 7.21 from SSR-3 without any further guidance. Delete it from one of the places.	Repetition		X This responsibilities and authority should be clearly defined and understood.		Guidance added to 5.2, consistent with DS497.
50.	USA 6	Para. 5.6	~~"In particular, in accordance with regulatory requirements, the reactor manager, the shift supervisors and the reactor operators shall hold an authorization (a licence or certificateion) issued by the regulatory body, operating organization or other competent an appropriate authority"~~	This quotation is unnecessary and misleading without the footnote to the paragraph in SSR-3 which clarifies that the reactor manager does not necessarily need to hold an authorization. Reference to SSR-3 is adequate.		X "In particular, in accordance with regulatory requirements, the reactor manager, the shift supervisors and the reactor operators shall hold an authorization (a licence or certificate) issued by the regulatory body, operating organization or other competent authority" (see Ref. [2], para. 7.5). The reactor manager does not necessarily need to hold a licence to operate the reactor		Guidance on positions to be authorized in accordance with SSR-3. Para in SSR-3 included.

						but needs to have completed a training programme		
51.	USA 7	Para. 5.12	from one to ~~five~~ six years.	Revert the change in the revised document. NRC issues operator licenses for a period of 6 years, subject to more frequent checks that the licensed individual maintains all necessary qualifications and medical standing.	X			
Section 6								
52.	Germany 17	6.4	The records should be collected and archived in accordance with the applicable management system requirements on confidential basis (see Ref. [9]).	Personal records should be kept confidentially			X	Management system requirements will cover confidentiality