

TITLE: DS 510B, Safety in the Utilization and Modification of Research Reactors

COMMENTS BY REVIEWER					RESOLUTION			
Reviewer:								
Country/Organization:				Date: 06/02/2020				
Comment No.	Reviewer	Para/ Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
General								
1.	France 1 NSGC (MoE, DNS)	General		This guidance shows significant, satisfactory progress towards balanced and informative guidance regarding interfaces between safety and security.	X			
2.	France 2 NSGC (MoE, DNS)	General	Use “nuclear security” instead of “physical protection” in the document. Use “nuclear security” instead of “security” in the document.	In the context of DS510B, “nuclear security” and “physical protection” are synonyms, but safety experts may not be aware of it. Adding a footnote and then use only “nuclear security” would clarify it. Likewise, “security” may be used to refer to concepts different from “nuclear security”. To avoid any confusion, when the word refers to “nuclear security”, the full wording should be used.	X			
3.	Germany 1	General	Ensure that notation for cited references is the same within entire document	Currently notations of different art have been used, e.g.: 1) Doc-No [x] (see Para 3.11: NS-G-4.4 [6])		X The format of citations will be standardized by the editor in step 12		

				2) Ref. [x] (see Para 3.35: Ref. [18]) 3) Doc-Title [x] (see Para 4.12: IAEA Safety Standards Series No. GSR Part 3, Radiation Protection and) Please unify				
Section 1								
4.	Brazil 1	1.2/5	(mention SSG-20 in reference [2], NS-G-4.1 in reference [3], and so on, up to [11])	Document is introduced as DS510A, then referred as SSG-20 throughout the text (e.g. 1.15/3), and only at "REFERENCES" section the correspondence is made clear. Same reasoning applies to refs. [3] to [11].	X			
5.	Brazil 2	1.7/6	(Please consider adding an extra sentence or two, to the effect that even though NS-G-2.3 may bring valuable extra guidance, power plants are usually conservative designs; on the other hand, research reactors may have innovative designs with yet to be evaluated characteristics and, therefore, with potential unforeseen safety impacts.)				X	This text has been standardized for all research reactor safety guides. NS-G-2.3 recommends a comprehensive approach for implementing a modification

								n project, independent of the reactor technology. Such an approach would consider the design characteristics of the research reactor being modified.
6.	Brazil 3	1.13/7	<p>...to safety, [to] an experiment or [to] an experimental device.</p> <p>or:</p> <p>...software[, or an experiment or an experimental device] important to safety.</p>	<p>First option makes clearer that the current setup is modified, and acceptance criteria are (1) satisfy safety requirements and (2) accommodate a new experiment and/or (3) a new experimental device; second option: experiment and/or experimental device are part of the setup being modified, and such modification should satisfy a safety requirement.</p>		X	<p>Second option incorporated. Text now reads, "... a structure, system component, or item of software, or an experiment, or an experimental device, important to safety."</p>	
7.	France 3 NSGC (MoE, DNS)	1.14 See "General"	See "General"	<p>Modify: « Modifications to structures, systems and components with nuclear security aspects will also... »</p>		X		

8.	France 4 NSGC (MoE, DNS)	1.14 See “General”	See “General”	Add a footnote: “Recommendations on nuclear security ¹ matters...” ¹ Historically, the term ‘physical protection’ has been used to describe what is now known as nuclear security of nuclear material and nuclear facilities. This publication uses the term “nuclear security”.	X			
9.	USA 2	Para 1.6	Modify Para to read: “The recommendations provided in this Safety Guide are intended for operating organizations of research reactors, regulatory bodies , and also for external users of research reactors (i.e. experimenters), technical support organizations and other persons involved in utilization and modification projects.	Completeness to include potential users of the guidance. The guidance could also be appropriate for use by inspectors, auditors, and regulatory authorities to ensure safety in utilization and modification of research reactors.	X			
10.	France 1	1.7	“Additional guidance may be necessary that is provided in (IAEA Safety Guides for power reactors may be considered)”	Referring to Safety Guides for power reactors for the numerous specific cases of research reactors listed in this paragraph is not justified and could lead to refer only to those guides.		X This paragraph has been rephrased and is standardized for all research reactor safety guides. This statement has been softened, using the word “might”. “For such research reactors, the recommendations provided in IAEA Safety Standards Series No. NS- G-2.3, Modifications to		

						Nuclear Power Plants [13] might be more suitable.”		
11.	USA 3	Para 1.8 Line 3-8	Modify sentence to read: While all recommendations in this Safety Guide are to be considered, some might not be applicable to those research reactors with low hazard potential (see paras 2.15 – 2.17 and Requirement 12 of SSR-3 [1], and IAEA Safety Standards Series No. DS511, Use of a Graded Approach in the Application of the Safety Requirements for Research Reactors [11])	Redundancy: Remove redundant text (e.g.; the title of the reference #11) since it is already provided in the reference list.			X	The new format for references in IAEA safety guides is to provide the complete reference on the first instance and for subsequent references only refer to the document number.
Section 2								
12.	India 1	10/ 2.4	The management system should support the development, implementation and enhancement of a strong safety culture, development and reinforcement of leadership for safety in all aspects of modification projects and the utilization programme	The role and behavior of leaders in an organization are fundamental to achieving and maintaining excellence in safety. Moreover, it has been acknowledged as an effective tool to inculcate a strong safety culture by IAEA in GSR Part -2.			X	The existing text is consistent with Requirements 2 and 3 from GSR Part 2.
13.	Brazil 4	2.3/1	...reactor[, proposed new utilization or modification, meet] the requirements...	Please consider the clarification, if appropriate.			X	Existing text is consistent with GSR

Section 3

14.	France 5 NSGC (MoE, DNS)	3.36 See “General”	See “General”	Modify: Guidance on the nuclear security aspects of modifications to instrumentation	X			
15.	France 6 NSGC (MoE, DNS)	3.37 See “General”	See “General”	Modify: 3.37. Modifications carried out on any equipment, including structures, systems and components important to safety, and on physical- protection nuclear security systems, and nuclear- security measures should	X			
16.	France 7 NSGC (MoE, DNS)	3.39 See “General”	See “General”	Modify: The reactor manager should ensure that the organization responsible for providing the nuclear security of the research reactor	X			
17.	France 8 NSGC (MoE, DNS)	3.40 See “General”	See “General”	Modify: The nuclear security layers in the research	X			
Section 4								
18.	Germany 2	4.3	In addition to the reactor operations, such as startup, steady state or transient state <u>operation</u> and shutdown,	The former proposal by US NRC (comment USA 3) to use the term “transient operation” is appropriate. This is in line e.g. with SSG- 28	X			
19.	India 2	21/4.5	The operating organization’s safety policy towards modifications should be subjected to continuous improvement and should be regularly reviewed. For each	Editorial correction	X			

			modification,					
20.	Germany 3	4.27	<u>In the design of experiments, particular consideration should be given to</u> Furthermore, certain activated corrosion products (such as silver) <u>as they</u> tend to plate out (i.e. form a coating) on cooling circuit surfaces, thus creating contamination and the potential for radiation exposure during handling and maintenance.	Para 4.27 should contain a recommendation.	X			
Section 5								
21.	Brazil 5	5.5/after	(Please improve FIG. 1. resolution.)		X			
22.	Germany 4	5.2	The extent of the involvement of the safety committee and the regulatory body <u>should depends</u> on the safety category of the experiment or modification; recommendations for determining the safety category are provided in Section 3 of this Safety Guide. Further recommendations on the interactions between the operating organization and the regulatory body are provided in GSG-13 [17].	Para 5.2 should contain a recommendation.	X			
23.	Germany 5	5.7	Experiments and modifications at research reactors <u>should</u> might also arise from a variety of considerations. These considerations are addressed in Annex V.	Para 5.7 should contain a recommendation			X	Annex V does not list recommendations. The statement in 5.7 is referring to why modifications may be necessary. It is not a recommend

								ation statement.
24.	Germany 6	5.18	Based on the The pre-design appraisal the operating organization should might lead to a decision decide not to whether execute the planned experiment or modification should be executed or nor.	Para 5.18 should be formulated as a recommendation. Otherwise, para 5.18 contains no further guidance and could be deleted.	X			
Section 6								
25.	Germany 7	6.21	The safety of an experiment or modification that is to be implemented should be verified through a commissioning programme involving tests and checks, and measurements and evaluations prior to and during implementation of the experiment or modification. Requirement 73 of SSR-3 [1] is also applicable for the commissioning of an experiment or modification. The operating organization should discuss with the regulatory body and define appropriate witness points and hold points to inspect the commissioning of the experiment utilization or modification project.	Consistency. This para. gives recommendation on experiments and modifications. Utilisation is addressed elsewhere.	X			
Section 9								
26.	France 2	9.2	... “- The worst possible combination of equipment failures and malfunctions due to organizational or human causes. ”	Human error should not be considered as the initiating event. Most of the time, human error is a consequence of organizational malfunctions and not the root cause of visible failures.	X			
27.								
Annex II								
28.	USA 1	Annex II Page 56, Section 4.7	<u>4.8</u> Shielding	Mislabeling of sections. Shielding should be labeled as Section 4.8.	X			

29.								
Annex IV								
30.	France NSGC (MoE, DNS)	9	IV – 1 See “General”	See “General”	Modify: “The following are examples of safety focused questions on proposed modifications to the physical—protection nuclear security system, and of nuclear security focused questions on proposed modifications important to safety, for use in assessing a modification to a research reactor:” “Could the proposed modification result in a design basis limit for a fission product barrier being exceeded or altered (e.g. changes to nuclear security measures aimed at preventing”	X		
31.	France 3		IV-1	“...for use in assessing a modification to a research reactor: Safety focused questions on proposed modifications to the physical protection system ...”	Precision on the title to avoid any misunderstanding			X The precise description of the annex is included in the text of para IV-1. The wording of the title is consistent.
32.	France 4		IV-1	“...with the regulatory requirements for safety? Nuclear security focused questions on proposed modifications important to safety ...”	Precision on the title to avoid any misunderstanding			X The precise description of the annex is included in the text of para IV-1. The wording of the title is

									consistent.
33.	France 5	IV-1 Page 62	“- Could the proposed modification decrease the effectiveness of the nuclear security plan for the site or research reactors or invalidate the protective strategy for the site or research reactor (e.g. communications, timelines and access routes for contingency response, equipment and systems for nuclear security, measures against potential insider threats or protected response positions)?”	Addition of the example of insider threats.	X				
Annex V									
34.	France 10 NSGC (MoE, DNS)	V – 6 See “General”	See “General”	Modify: V–6. The need for modifications might also arise from considerations of reactor economy, fuel availability, human factors or physical protection nuclear security at the reactor.	X				