

Revision of 7 closely interrelated Safety Guides on the Operation of Nuclear Power Plants: NS-G-2.2 to 2.6, NS-G-2.8 and NS-G-2.14 (DPP DS497 indice 2)

NS-G-2.8: 140 comments / **Accepted** (fully or partially): **63** (36%) / **Rejected: 114** (64%)

Some comments are multiple: one part can be accepted and another rejected; hence, total of “accepted” and “rejected” is not equal to number of comments

Country or Organization	Number of comments	Accepted	Rejected
Egypt	6	5	1
Finland	94	44	87
Germany	22	6	16
Hungary	7	4	3
Japan	2	0	2
South Africa	7	3	4
Pakistan	2	1	1

COMMENTS BY REVIEWER				RESOLUTION			
Guide: NS-G-2.8 Reviewer: Moustafa Aziz Country & Organization: Egypt - ENRRA				Page 2 Date: 29/05/2019			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for rejection
1.	2.9	... schedules to...	Separate the two words	Yes			
2.	3.28	... of ...	The word (of) should be with the same document font.	Yes			
3.	3.29	. The ...	The should be with the same document font.	Yes			
4.	4.31	... confronting emergencies...	Separate the two words.	Yes			
5.	4.32	- To detect and address weakness in the current plan.	Can we added this sustenance to the list of 4.32 to consider weak point in the current plan, if any.			Yes	Already included in bullet n°2: “to identify potential weaknesses”.
6.	5.14	... Management and Leadership for safety, safety standards series No. GSR part 2 [8].	The should be with the same document font.	Yes			

COMMENTS BY REVIEWER				RESOLUTION			
Guide: NS-G-2.8 Reviewer: M-L Järvinen Country & Organization: Finland - STUK				Page 2 Date: 28/05/2019			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for rejection
1.	General	IAEA should consider developing a process for simultaneous development or revision of several safety guides. Lessons learned from the revision of the Safety Requirements after Fukushima Dai-ichi accident 2011 should be used in developing this process.		Yes	The team have been working like this. Lessons learned from the revision of the Safety Requirement were followed. DPP was developed based on this experience.		
2.	General	IAEA should consider presentation of the recommendations for maintenance only in one safety guide. The new safety guide for ageing management and LTO, SSG-48 presents				Yes	Comment not relevant for NS-G-2.8.

		current, updated recommendations for maintenance. The safety guide NS-G-2.6 and SSG-48 are overlapping.					
3.	General	Development of procedures for accidents in NS-G-2.2 is overlapping and may be conflicting with SSG-54. The new accident management guide SSG-54 should be considered also in other relevant safety guides in this set. IAEA should consider presentation of the recommendations only in one safety guide.				Yes	Comment not relevant for NS-G-2.8. Presentation of recommendations only in one guide is not possible and not recommended.
4.	General	Core management section is overlapping in NS-G-2.5 and in DS488. IAEA should consider presentation of the recommendations only in one safety guide.				Yes	Comment not relevant for NS-G-2.8.
5.	General	It is not clear from the guidance which safety requirements are covered by each safety guide. There should be a transparent and systematic way of presented the covered safety requirements in each safety guide. As a part the allocation of the requirements made for DPP DS497 should be utilized.		Yes	In paragraph 1.2: references to Req. 4, 7 and 18 of SSR-2/2 Revision 1 added.		
6.	General	Safety-security interface should be implemented to all of the safety guides in a systematic manner. Some guides do not even mention the word security. The set of safety guide demonstrate the need for guidance on the management of the safety-security interface. Presently the safety guides give references to security guides and vice versa. However, there is not always a suitable guide to reference for instance for safety-security interface in change management. The				Yes	Addressed consistently with the DPP scope. In addition, it is in contrary with comments No. 2, 3, 4 and 5. Please, see answer in the resolution table

		utilization of the synergies of implementation of safety security interface should be emphasized. There is need for a specific guidance on safety security interface management.					of the NS-G-2.4 for this comment.
7.	General	The terminology should be harmonized. There are several examples of the harmonization needs in the safety guide specific comments. The examples concerning the term risk are collected for safety guide NS-G-2.6. However, similar review should be made for all of the safety guides and the use of term risk should be systemized.				Yes	This is out of the scope of the DPP. The word “risk” (or risks) is used six times in the NS-G-2.8, all without any conflict with the interpretation of the term in the IAEA Safety Glossary. In the IAEA Safety Glossary, “risk” is mentioned 93 times! Words used have to the extent possible been checked against the IAEA Safety Glossary.
8.	Title of the document	Recruitment, Qualification and Training of Personnel for Nuclear Power Plants and other Nuclear Facilities	The main focus of the safety guides is NPPs. However, it can be used with a graded approach to other nuclear facilities such as final disposal facilities.	Yes	But no change: see end of paragraph 1.4 (comment 20 is similar).		
9.	General	Safety-security interface aspects should be included to the NS-G-2.8 Safety Guide update. The topic is one of the issues highlighted by resent working groups on safety security interface.				Yes	Interfaces safety-security are addressed in this guide. For example, included in 5.6: “These training programmes should

							address the interface between nuclear safety and nuclear security to understand their requirements”.
10.	General	Please check the guide systematically. The terminology on accident conditions, accident management should be in line with SSR-2/1, SSR-2/2 Revision 1 and the new safety Guide SSG-54.		Yes	Checked. In line with IAEA Safety Glossary and this comment is also covered by other comments in this RT.		
11.	General	Generic: harmonize terminology used, i.e. staff, employee, personnel, person, individual (e.g. unmarked para before para 4.22)	For consistency throughout the entire document.			Yes	Worthwhile? Not in favour of this remark (employee(s): 13; personnel: 159; individual(s): 29; staff: 62 and person(s): 36 times; too much work. These terms are used in many documents. At last, this is out of the scope of the DPP also.
12.	General	Please check the use of terms shall and should. para. 4.7 and 4.46 are shall statements although they are not quotations from requirements level documents.		Yes	Correction in paragraphs 4.7 and 4.46. Checked and no other “shall” in the guide.		
13.	General	Several paragraphs are a copy of the information presented in higher-level hierarchy safety standards, without bringing any added value (e.g. para 4.19). It would be useful to the reader attempting to implement the guidance in this document to restrict such presentation.	For simplification and hierarchical separation of requirements and guidance. Para 4.19 Representative simulator facilities			Yes	This is out of the scope of the DPP. It is also helpful when it is relevant to have the requirement in order to avoid jumping between documents.

			<p>should be used for the training of control room operating personnel, shift supervisors, responsible managers and technical support personnel.</p> <p>Para. 4.19 defines to whom training should be provided. Not defined in SSR-2/2 Revision 1.</p>				
14.	General	<p>There are several TECDOCs addressing training and qualification for NPP personnel, having been used successfully in industry for years.</p> <p>The use of information in these TECDOCs should be considered, as there is a significant gap between requirements and practical info in TECDOCs in the area. The guidance could be further enhanced.</p>	For consideration.			Yes	TECDOCs are helpful and useful, but there is no consensus; so, we cannot use them in a systematic manner. In addition, the policy of the IAEA for the new document, it is not allowed to mention TECDOCs.
15.	General	<p>The structure of the document should be reviewed and outcome of the review should be used to restructure of the document?</p> <p>Some of the text in chapter 4 - "Training Policy" are very detailed, but chapter 5 - "Training Programs" is general outlines. Content and guidance need to be reviewed in detail. A lot of overlapping and incoherent text in chapter 4 text correct place in some cases is in chapter 5.</p>				Yes	The goal of the revision was not to restructure or rewrite the guide, but mainly to address some guidance coming from recent accidents or OSART missions (see DPP).
16.	CHAPTE R 7	At this point there is a duplication with NS-G-4.5 Chapter 5, which addresses the exact same	Chapter 7 of current draft needs to be completely			Yes	This is out of the scope of the DPP.

	AUTHORIZATION	aspect (authorization of operating personnel), but for research reactors. Chapter 5 of NS-G-4.5 is very well written.	<p>rewritten, as it is ambiguous and inconsistent.</p> <p>Proposal to copy content of section 5 of NS-G-4.5 in current Chapter 7 and revise if specific NPP details are missing.</p> <p>Alternatively, consider deleting entire section 7, as it does not bring any added value to the existing requirements.</p> <p>The two examples marked with * in the end of this comment table represent a good pointer that the quality in the current draft (v8) is low. Please suggest solution, in the context of Long Term Structure of IAEA Safety Standards.</p>				<p>“Authorization” is in line with the IAEA Safety Glossary. Of course, it is possible to reconsider if it is useful to revise the chapter 7, but the NS-G-4.5 is for personnel of research reactors and this NSG used NS-2.8 to be written.</p>
17.	1.2 Second phrase	1.2. This Safety Guide was prepared under the IAEA programme for safety standards for nuclear power plants. The present publication is a revision of and supersedes the IAEA Safety Guide on Recruitment, Qualification and Training of Personnel for Nuclear Power Plants, issued in 2004 ² as Safety Series No. NS-G-2.8.	<p>Minor correction. IAEA NS-G-2.8 was issued in 2002.</p> <p>Also applies to para 1.3</p>	Yes			
18.	1.2 Last phrase	It is related to <u>It is recommended that this Safety Guide is read in conjunction with Ref. The Safety Guide on the Operating Organization for Nuclear Power Plants, Safety Standards Series No. NS-G-2.4 [2], which</u>	Proposal of editorial change to emphasize interrelation between the SGs being revised.			Yes	“Related” is better.

		presents recommendations on the organizational structure for a nuclear power plant and thereby provides a basis for plant staffing.					
19.	1.3	<p>1.3. The objective of this Safety Guide is to outline the various factors that should to be considered in order to ensure that the operating organization has a sufficient number of competent personnel for safe operation of a nuclear power plant. In particular, the objective of this publication is to provide general recommendations on the recruitment and selection of plant personnel and on the training and qualification practices that have been adopted in the nuclear industry <u>to reflect changes in the operational practices in the nuclear industry</u> since the predecessor Safety Guide was published in 20042 (see paragraph 1.2).</p> <p>Together these elements constitute the systems which support the effective delivery of competent personnel.</p> <p>In addition, this Safety Guide seeks to establish a framework for ensuring that all managers and staff employed at a nuclear power plant demonstrate their commitment to the management of safety <u>leadership and management for safety</u> to high professional standards.</p>	<p>Proposal to simplify the statement “NS-G 2.8 + updates in practices”</p> <p>Language from DPP for consistency.</p> <p>Not clear what the added value is. Vague statement, suggestion to remove. Note: if current statement will remain valid, the correct term used should be “factors”, not “elements”, for consistency with the first phrase under the para 1.3.</p> <p>To match the GSR Part 2 language</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>“to” is deleted.</p> <p>Double with the beginning of 1st sentence of the para.</p>	<p>Yes</p>	<p>Twice “practices”.</p>

		In addition the application of the recommendations of in this safety guide will support the fostering of a strong safety culture.	Proposal for editorial change to remove repetitions.				
20.	1.4	Some parts or all of This Safety Guide may also be used, with due adaptation, as a guide to for the recruitment, selection, training and qualification of staff for other nuclear installations (such as nuclear fuel cycle facilities), in accordance with a graded approach.	Proposal to use “current” language from safety standards, for consistency purposes. The reason for deleting research reactors from the original version is not clear – according to the IAEA Safety Glossary, research reactors are, in fact, nuclear installations, while nuclear fuel cycle facilities are not (entirely). Proposal to delete brackets for simplification.	Yes Yes	Only replaced “to” by “for”. Deleted text between brackets.		
21.	General Recruitment and Selection	The section Recruitment and Selection para. 2.13.-2.15 should somehow address e.g. by referencing to relevant security measures such as f trustworthiness assessment and background checks (as part of insider thread mitigation programme). Security measures relate to the start and the end of the employment as well as in between.		Yes	Added “including security information according to national regulations” in paragraph 2.13.		
22.	1.5	Section 2 provides guidance on the recruitment and selection of suitable personnel for a nuclear power plant. Section 3 provides guidance on the establishment of personnel qualification, explains the relationship between qualification and competence, and identifies how competence may be developed through education, experience and training. Section 4 deals with				Yes	This is out of the scope of the DPP.

		<p>addresses general aspects of the training policy for nuclear power plant personnel: the systematic approach <u>to training</u>, training settings and methods, initial and continuing training, and the keeping of training records. Section 5 provides guidance on the main aspects of training programmes, including those for specific categories of personnel. Section 6 provides recommendations on facilities and materials used for training. Section 7 defines <u>addresses authorization in the context of key personnel competences, of particular relevance and provides guidance on who should be authorized to perform certain for tasks, or to hold certain positions in which they have direct control or supervision of changes in the operational status of the plant or have duties with a direct bearing <u>impact</u> on safety.</u></p> <p>In using the guidance from each section it should be recognized that competence can be developed in different ways and that the balance and reliance placed on selection, education, experience and training may vary.</p>	<p>Editorial proposal for eloquence of language.</p> <p>SAT is already a widely recognized and used methodology in the industry – propose to keep it in full for recognition purposes.</p> <p>Proposal for simplification. Authorization is already defined in higher-level safety standards and should be out of the scope of a safety guide. It is the understanding of this reviewer that the current draft focuses on the personnel authorization aspects instead.</p>				
23.	2.1	<p>A sufficient number of experienced staff, supplemented as necessary by consultants or contractors, should be available to ensure the safe operation of the plant, so that duties relevant to safety maybe <u>may be</u> carried out without undue haste or pressure.</p>	<p>Editorial to avoid confusion.</p>	Yes	“Maybe” → “May be”.		
24.	2.2 Except last phrase	<p>The plant staffing plan should be regularly reassessed and updated in accordance with necessary organizational changes. Organizational changes can result from: <u>changes to work programmes resulting from life cycle stages and associated licensing milestones, from</u> adoption of a new technology, <u>addition of NPP units</u> changes in life cycle stage, or from the feedback of</p>	<p>Proposal to shift information for flow, with additions to reflect both sides of the spectrum.</p> <p>Organizational changes mostly occur in correlation with life cycle</p>			Yes	This is out of the scope of the DPP.

		operating experience, especially when significant improvements in safety or in the understanding of root causes can help provide <u>insights</u> to avoid the recurrence of events.	changes and/or regulatory requirements as part of licensing. Addition of NPP units (same technology or different) also prompts significant reorganization.	Yes	Added.		
		<u>Reassessment of staff planning could also be initiated by issues as diverse as age profiles of plant personnel, advances in automatic control or changes in waste management policies could initiate such a reassessment process.</u>		Yes	Changed : “Issues ... should also initiate ...”		
25.	2.2 Last phrase	Staff fluctuation attrition, loss of young staff retention, and motivation and career development problems for special situations of plants such as start-up of new projects and facing shutdown within the next few years should be taken into account <u>when performing the periodic reassessments of plant staffing plans.</u>	Added start-up of new NPP project, which is a particular challenging moment in the plant personnel qualification, training and staffing field. Motivation and career development are particular issues in these cases. Proposal to move this last phrase at the beginning of para 2.3 to provide separation of the organizational arrangements for staffing from the reassessment of the staffing plan (2.2).	Yes	Added: “when performing the periodic reassessments of plant staffing plans.”	Yes	This last sentence is the logical continuation of paragraph 2.2.
26.	2.3	Staff fluctuation attrition, loss of young staff retention, and motivation and career development problems for special situations	Proposal to add last phrase of 2.2 at the beginning of this			Yes	See comment 25.

		<p>of plants such as start-up of new projects and facing shutdown within the next few years should be taken into account when performing the periodic reassessments of plant staffing plans.</p> <p>More information on the organizational arrangements for the staffing of nuclear power plants, the basis for the organizational plan and factors affecting the organizational structure, such as staffing, can be found in Ref.[2].</p>	<p>paragraph for consistency of recommendation.</p> <p>Proposal to increase correlation with future NS-G-2.4</p>			Yes	“Staffing” is already present in the beginning of the sentence.
27.	/	RECRUITMENT POLICY	<p>Paras 2.5 – 2.11 do not address solely the recruitment policy, but also the strategy (long-medium-short-term objectives), planning, programme and process. Suggestion to remove “policy” from the section title (as a first step).</p>			Yes	“Policy”, here, is to be understood broader than the “policy paper”.
28.	2.5	<p>The recruitment and selection policy at a nuclear power plant should be aimed at retaining a pool of experienced staff, to ensure “that the necessary knowledge, skills and abilities safety expertise are sustained at the plant, and that long term human resources objectives of human resources policy are developed and are met.” Ref.[1] The pool of staff should covering:</p> <ul style="list-style-type: none"> • broad range of operational and safety expertise • A broad distribution of both age and experience should be established <p>to ensure “that the necessary knowledge, skills and abilities safety expertise are sustained at the plant, and that long term human resources objectives of human</p>	<p>Proposal to align with the internationally recognized HR terminology (KSA - knowledge, skills, abilities)</p> <p>Proposal to move last part of para to the front for making more apparent the logical linking between scope and objectives when building a recruitment and selection policy.</p>			Yes	Keep align with SSR-2/2 Revision 1.
						Yes	This is out of the scope of the DPP.

		resources policy are developed and are met. ²² Ref.[1]					
29.	2.8	When the formal requirements for experience cannot be met, consideration should be given to recruit personnel directly from schools, technical colleges and universities, etc. Specialized training should <u>then be planned and be</u> provided in theoretical disciplines as well as on the job through specific system, equipment and simulator training at the plant and at other organizations domestically and abroad. Whilst recognizing that this has many benefits for an organization (e.g. diversity), where personnel are recruited in this way, the extent of training required should be systematically assessed. <u>Further recommendations on the systematic approach to training can be found in Chapter 2 TRAINING. More detailed guidance on the review and modification of training programmes can be found in Chapter 5 TRAINING PROGRAMMES.</u>	The proposal aims at highlighting the importance of planning (minimize a reactive response, which might produce delays). Proposal to enhance the separation of recommendations per topical area.	Yes		Yes	It is not the approach within the standards to make internal references.
30.	2.9	The operating organization should plan for the recruitment and selection of personnel for a new plant. That can be anticipated in terms of positions and recruitment schedules to be prepared in advance of the beginning of plant construction. The replacement of personnel who reach retirement age at an existing operational plant or the appointment of personnel to decommission a plant should also be anticipated, in order to prepare recruitment and selection schedules. However, vacancies also arise through personnel leaving or moving to other positions, or through premature retirement. Such situations require some flexibility in the recruitment and selection processes described in this section.	Already covered under section “RECRUITMENT PROGRAMME FOR NEW NUCLEAR POWER PLANTS”			Yes	Section “Recruitment for new nuclear power plants” mainly address a first NPP or a first of a new type.

31.	Section title, page 8	SELECTION PROCESS	Paras 2.12 - 2.19 do not focus solely on the selection process, and the suggestion will align section with the Recruitment section.			Yes	This is out of the scope of the DPP.
32.	Section title, page 9	RECRUITMENT PROGRAMME FOR NEW NUCLEAR POWER PLANTS				Yes	This is out of the scope of the DPP.
33.	3.3	Before undertaking any safety related work, staff personnel should demonstrate the appropriate knowledge, skills and attitudes to ensure safety under a variety of conditions relating to their duties. Staff should be trained in the safety management principles that are of relevance to their work, and in how to promote safety culture and conservative decision making by means of positive feedback and recognition.	Same term to be used through the document. Several staff's and personnel. For clarity and consistency. Removal of duplication with other places in this document where this same statement appears. While perfectly valid, repetition of the statement (pertaining to and reflected in the training section) does not bring added value or weight.			Yes	This is out of the scope of the DPP.
34.	3.4	3.4. Where appropriate to <u>As required by the specific tasks and safety related duties assigned activities undertaken by particular plant personnel,</u> competence in management and supervision, leadership, appreciation and use of analytical methods, and other 'soft skills' should be demonstrated by plant personnel. 3.5. The competence of plant personnel should also include such aspects of safety culture as a <u>in terms of demonstrating a questioning attitude, a rigorous and prudent</u>	Merge. The two paras address the same topic – examples of KSAs. Proposal to keep it simple, while pointing out the major KSAs that NPP personnel should demonstrate.			Yes	This is out of the scope of the DPP.

		approach to safety, and the necessary communication skills.					
35.	3.6	<p>Move as a separate para after para 3.8</p> <p>3.6. When personnel are to be replaced, a reasonable amount of time overlap should be provided for knowledge transfer from one generation to another so that replacement personnel can acquire an understanding of their new duties and responsibilities and of on-going activities prior to assuming their positions. The competence of each individual should be assessed against established requirements before that individual is assigned to a position.</p>	<p>For flow of information.</p> <p>Incorporated into 3.7</p>			Yes	This is out of the scope of the DPP.
36.	3.7	<p><u>Competences</u> The competence of all individuals should be fully-assessed periodically prior to assignation of staff to duty, and then periodically throughout the duration of the employment. by various means while they perform the duties allocated to their position; the <u>Competence</u> assessment should also cover the actual individual performance in the workplace against established <u>qualification</u> requirements. The requirements should be established in such a way as to ensure that the competences are and remain adequate appropriate to the tasks and activities to be performed.</p>	<p>For clarity, elimination of ambiguity.</p> <p>Qualification requirements need to be written in clear, as a formal means of verification of competences (e.g. university diploma).</p>			Yes	<p>Reverse was done for more clarity: paragraph 3.6 addresses specific assessment before assuming a new position. And paragraph 3.7 addresses periodic assessment.</p> <p>Keep align with old NS-G-2.8.</p>
37.	3.8	<p>Appropriate records of assessments against competence and qualification requirements should be established and maintained for each individual at the plant.</p>	See above			Yes	Assessments of both competences and qualifications must be recorded.
38.	3.10	<p>Irrespective of any formal authorization issued by other bodies, it should be <u>clear that the responsibility of the operating organization is responsible for ensuring and maintaining to ensure</u> the appropriate</p>	<p>Keep short and to the point.</p> <p>The concept is simple – the organization needs to invest in staff to</p>			Yes	<p>See also (opposite) comment 4 from Germany.</p> <p>Keep as in old NS-G-2.8.</p>

		<p>qualification of all on-site and off-site personnel. The responsibility of ensuring that individuals remain appropriately qualified should rest with the operating organization, although individuals should accept some responsibility in maintaining and developing their own competence through <u>by means of continuing professional training-</u></p>	<p>transform them in assets. The organization furthermore has the duty to do so, as otherwise safety functions cannot be performed and the safe operation of the plant cannot ultimately take place.</p> <p>It is not clear what the last phrase aims to suggest, other than the abstract idea of staff participating willingly (?) – there is nothing measurable here in terms of HR.</p>				
39.	3.11	Move after the 3.4 + 3.5 combined	To conclude, after examples, that there are specific (and possibly unique) combinations.			Yes	This is out of the scope of the DPP.
40.	3.20	(including mechanical drawings and electrical and electronic circuit diagrams in their area).	<p>Linked to the text before.</p> <p>Why Technicians have been highlighted compared to other positions?</p>	Yes	Deleted the text between ().		
41.	3.31-3.39	Consider making these a chart to give a better understanding. Emphasize of being examples.				Yes	This is out of the scope of the DPP.
42.	Section 4	<p>TRAINING POLICY</p> <p>Or</p> <p>TRAINING POLICY CONSIDERATIONS</p>	Paras 4.1 – 4.12 do not specifically address the training policy only, in addition roles, responsibilities, plans, general considerations etc.			Yes	This is out of the scope of the DPP. And training policy is adapted.

43.	4.2	The operating organization should formulate an overall training policy, <u>either an individual or included in other policies.</u>	Please add: <u>either an individual or included in other policies.</u>			Yes	This is out of the scope of the DPP.
44.	4.4	A training plan should be prepared on the basis of the long term needs and goals of the plant. The training plan s plan should be evaluated periodically <u>in conjunction with the periodic reassessments of plant staffing plans</u> in order to ensure that it is consistent with current (and future) needs and goals. Factors which impact can change a training plan include: <u>operational experience (commissioning, operation, decommissioning)</u> commissioning experience, operational experience and decommissioning experience at the plants of the operating organization; feedback of operational experience from other plants; significant modifications to the plant or to the operating organization; changes in regulatory requirements; changes in the State's education system, staff attrition, retention and motivation in fluctuation, loss of young staff and motivation problems for special situations such as start-up of new projects and of plants facing shutdown within the next few years.	Unnecessary. The universal long-term goal for an NPP is safe operation (and on the other side operational excellence), regardless of the technology. Editorial suggestion. Alignment with para 2.2 on staffing plans. Alignment with para 2.2 on staffing plans.	Yes	Clearer.	Yes	This is out of the scope of the DPP. No change in paragraphs 2.2 and 2.3.
45.	4.6	Switch para 4.6 and 4.7.	For logical flow (training needs, training plan, requirements, content).			Yes	This is out of the scope of the DPP.
46.	4.8	It should be the responsibility of the plant manager, with reference to each position important to safety, to ensure that: — training needs are continuously analyzed and an overall training programme is developed; — That training needs analysis gives priority to safety related requirements; — the training entity is provided with all necessary resources and facilities;	Brings no added value. Redundant due to implicit inclusion in the first part of the paragraph (“...with reference to each position important to safety”) and repetition of message in the previous paragraphs, such as para 4.5. - 4.7			Yes	Previous paragraph asks for training requirements (depending on the position of individuals) and that training needs must be prioritised for duties important to safety.

		<ul style="list-style-type: none"> — the performance of all trainees is assessed at various stages of the training; — the effectiveness of the training is evaluated; — the competence of the persons occupying such positions is periodically checked, and continuing training or retraining is provided on a regular basis so that their level of competence is maintained; — in allocating resources, the implementation of training programmes is given high priority; — a reasonable amount of time overlap is provided for knowledge transfer from one generation to another. 	<p>Proposal to delete as it is not clear what the intention of this bullet is. This bullet rather addresses knowledge transfer and, while valid, is not training related.</p>			Yes	<p>But this paragraph emphasises the responsibility of plant manager in this domain.</p> <p>Knowledge transfer is one of the ways to training => Must keep the bullet.</p>
47.	4.9	The training entity will be responsible for assisting the plant manager in establishing, verifying and maintaining the competence of plant staff.	What is the difference of personnel, staff and plant staff?			Yes	Only synonym.
48.	4.12 Last phrase	This may require a greater focus <u>of training</u> on structured fault finding and decision making.	Focus of phrase to be connected to training.	Yes			
49.	4.15 (b)	On the job training should be conducted in accordance with prescribed guidelines provided by incumbent personnel who have been trained to deliver this form of training or has been evaluated found to be competent to give the training. Progress should be monitored and assessments should be carried out by an independent assessor.	<p>Please clarify.</p> <p>Training people does not give automatic qualification for OJT of specific activities. Persons may have individual skills and competencies to provide OJT.</p>	Yes	On the job training should be conducted in accordance with prescribed guidelines provided by incumbent staff who have skills and competencies to deliver this form of training. Progress		

			Assessments can not always be done by an independent assessor, the assessor needs to have the same knowledge and skills, and who knows the topics of OJT and it's content.		should be monitored and assessments should be carried out by an independent assessor.		
50.	4.15 (c)	(c) Initial and continuing simulator based training for the control room shift team should be conducted on a simulator that represents the control room. The simulator should be equipped with software of sufficient scope to cover normal operation, anticipated operational occurrences and a range of accident conditions. Other personnel may also benefit from simulator based training.	Restrict text to simply say “accident conditions”, since this terminology would safely cover DBA and DEC (including SA, which is the point this reviewer wants to make, to align with SSR-2/2 Revision 1 R7).			Yes	Most simulators do not cover all accident conditions (e.g. severe accidents).
51.	4.17	... personnel in supporting functions. Therefore, before fuel loading at a new plant, testing of components and systems should be undertaken with freedom of access if it is not possible later in the plant’s operating lifetime.	Please clarify the text. Is the purpose to use the testing for familiarization of the personnel to the plant?	Yes	Dot was misplaced.		
52.	4.18	sessions should include pre-job briefings and post-job briefings.	Use correct HU-terms.			Yes	This sentence doesn’t address the use of HU-tools during simulator training. This sentence addresses the need to have briefings with the trainer before and after the simulator training. That’s why the terms are different.

53.	4.19	<p><u>Adequate training facilities, including a representative full scope simulator facilities, appropriate training materials, and facilities for technical training and maintenance training,</u> should be used for the training of control room operating personnel, shift supervisors, responsible managers and technical support personnel. =</p>	<p>Proposal to revise phrase to adopt SSR-2/2 Revision 1 language or to simply quote the requirement. Not clear what the additional guidance this paragraph is.</p> <p>Simulators need to be explicitly addressed so as not to create confusion and misunderstanding. The use of full-scope simulators for control room operators is a result of extensive HFE analysis and must not be understated. + editorial</p>			Yes	Paragraph 4.19 is focused on operators training on simulator, and does not address maintenance training (see e.g. 4.15(d) or 5.24 for maintenance training facilities).
54.	4.19.A	<p>As simulator training is an integral part of initial and continuing training programmes for control room operating personnel, shift supervisors, responsible managers, and technical support personnel, at consideration should be given to the following features in preparation, conduct and assessment of the training:</p>	Correction of typo	Yes			
55.	Unmarked para before para 4.22	<p>Comprehensive training <u>programmes</u> should comprise initial training and continuing training or retraining. Initial training should be provided to persons before they are assigned to a job or a position within the operating organization <u>to achieve the necessary competences to carry out their jobs duties.</u> Continuing training should be provided for all persons throughout their working life, as it is necessary to ensure that their knowledge, skills and attitudes are</p>	<p>For enhancement of language/terminology.</p> <p>To achieve the same level of detail with the continuing training presentation. This is taken from 4.24.</p>			Yes	This is out of the scope of the DPP.

		<p>maintained up to date current in both theory and practice. Continuing training should also be directed to the permanent improvement of skills and attitudes which are is necessary for safety related activities.</p> <p><u>In some States,</u> rRetraining is an alternative term for continuing training. <u>In other States,</u> rRetraining specifically describes also training in a different knowledge, skill or attitude, required because of a major modification to the existing plant or to plant operation, the installation of a new plant or a change of job. The training programme for every individual should define the contents of the initial training, continuing training or retraining.</p>	<p>This reviewer proposes reverting to original version, for more clarity. Retraining does not have a universal definition, nor should one be attempted here. Instead, presentation of various interpretations/practices is more useful for exemplifying the concept.</p> <p>Additionally, retraining does not appear in this document in strict conjunction with continuing training (continuing training or retraining) although it is part of the concept or repetitiveness/continuity. It would be useful to check for consistency throughout the document, to avoid ambiguity.</p> <p>The training itself is not special in these cases (in terms of curricula), its schedule is special/atypical compared to a regular</p>	<p>Yes</p>	<p>Changed “is” by “are”.</p>	<p>Yes</p>	<p>The suggested comment does not have any added-value.</p>
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		<p>Special <u>Additional</u> training may be necessary if an employee shows deficiencies in performance, when an employee has been away from a safety critical assignment for <u>an unacceptable amount of time several months or more</u>, or if there is a <u>specific</u> need to prepare for an infrequent eventuality.</p>	<p>schedule. In particular for the case where the performance is poor, training is usually re-given but not for an infinite number of times. Instead, the capabilities of the staff are finally reassessed, and/or the training is adjusted for cases where this symptom is common to more staff.</p> <p>Proposal is to replace “special” by “additional” to capture the addition to normal schedule, or refresher upon return to service (if outside of training frequency, for example) or any supplementary need for training due to specific circumstances.</p> <p>In particular the second case exemplified is usually controlled by refresher training and associated testing frequency as prerequisites for the job.</p>			Yes	This is out of the scope of the DPP.
56.	4.22	Initial and continuing training for all employees of the operating organization, including plant personnel, should include general employee training (see paragraphs 5.1 – 5.1.A) as well as <u>specific</u> training for a thorough understanding of their particular	<p>To highlight the concepts of General training vs. Specific training.</p> <p>Minor proposal for language flow and clarity, as well as for a</p>	Yes			

		duties <u>roles</u> and responsibilities, <u>as well as</u> and of their <u>individual</u> contribution to the safe and efficient operation of the <u>organization's</u> plant.	clearer differentiation between responsibility and accountability.				
57.	4.23	Delete	Covered in 4.21.	Yes			
58.	4.24	<p>An initial training programme should be established for all plant personnel to achieve the necessary competence to carry out their jobs. Initial training should help personnel to achieve a high level of performance in terms of safety and professionalism, in <u>be designed and implemented in order for personnel to meet the operational standards required to ensure safe operation of the plant. The goals of initial training should aim to include the following:</u></p> <ul style="list-style-type: none"> — to complement any formal education in the general areas of technology and science; — to achieve <u>provide knowledge and understanding of nuclear safety principles, their significance and their implementation, e.g. defence in depth;</u> — to achieve <u>provide an</u> understanding of safety management, <u>including</u> procedures and standards of performance; — to impart a <u>understanding</u> knowledge of nuclear technology <u>in general</u> and of the plant concerned <u>in particular</u>; — to achieve <u>provide an</u> understanding of the principles of operating and maintenance of specific plant systems and equipment; — to develop <u>job-specific skills relating to the job assignments;</u> 	<p>First sentence carried to unmarked para before 4.22 to harmonize level of detail on types of training</p> <p>Second and third phrase – for simplification and clarity.</p> <p>Understanding is more than knowledge. Not needed.</p> <p>Procedures and standards are part of management system.</p> <p>Move as second bullet. For flow.</p> <p>Move above job-specific skills. For flow.</p>			Yes	This is out of the scope of the DPP.

		<p>— to emphasize safety aspects of the plant in general and specific safety aspects relating to the tasks assigned;</p> <p>— to inculcate <u>instill</u> appropriate attitudes towards safety.</p>	Manageable, working language.				
59.	4.25	<p>The goal of eContinuing training <u>should be designed and implemented</u> is to maintain <u>knowledge, skills and attitudes of plant personnel up to date</u> in both theory and practice of plant personnel. To achieve this goal, areas of knowledge necessary for safe plant operation should be systematically reviewed.</p> <p>The continuing training programme should cover recent industry and plant specific operating experience, identified problems in performance, plant modifications and procedural changes.</p> <p>Continuing training should achieve the following:</p> <ul style="list-style-type: none"> — improve the knowledge and skills of personnel when changes in the scope of jobs are identified; — maintain and in selected areas enhance the skills and knowledge necessary required to accomplish <u>successfully perform</u> routine, abnormal and emergency duties, as applicable; — increase the level of <u>enhance</u> understanding of <u>selected</u> fundamental matters (e.g. nuclear safety principles and requirements) that were presented in initial training, with emphasis on areas of demonstrated weakness; 	<p>Taken from unmarked para before 4.22 for consistency.</p> <p>Move to section TRAINING PROGRAMMES. For consistency.</p> <p>Should improve, should maintain etc. For language flow.</p> <p>For flow of and accuracy of message (e.g. all KSA are required, not needed, work duties are not accomplished, but successfully performed).</p> <p>No need to repeat that continuous training follows the initial training.</p>			<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>If it is exactly the same sentence as in unmarked paragraph before 4.22, then it has no added value and may be deleted. Keep as in old NS-G-2.8.</p> <p>This is out of the scope of the DPP.</p> <p>Because “improve” or “maintain” are already used in the bullets after.</p>

		<p>— maintain an awareness of the responsibility for safe operation of the plant and of the <u>safety consequences of human error negligence and faults</u>;</p> <p>— correct deficiencies in personnel performance, <u>as identified</u> that have been detected through by the analysis of <u>industry and plant operating experience</u>;</p> <p>— maintain the personnel's knowledge of plant modifications and <u>understanding of</u> procedural changes in areas to which they are assigned;</p> <p>— emphasize lessons learned from industry and plant specific operating experience to prevent repetition of errors;</p> <p>— emphasize topics identified by managers and supervisors;</p> <p>— enhance the performance of operations personnel through timely training for infrequent, difficult and important operational tasks.</p>	<p>Human error is the generic terminology and it encompasses more than negligence. It is not clear what is meant by fault.</p> <p>Language flow.</p> <p>Understanding is required here to be able to process the impact of those procedural changes.</p> <p>For highlighted bullet: information is missing with regard to the rationale of enhancing a management identified topic for continuous training. It is required that Management approves all training programmes, as such something specific must have been intended. Either complete the sentence or delete.</p>	<p>Yes</p> <p>Yes</p>	<p>But we keep the message here about responsibility, negligence and faults.</p> <p>Partially</p>	<p>Yes</p> <p>Yes</p>	<p>No added value Keep as in old NS-G-2.8.</p> <p>This is out of the scope of the DPP.</p>
60.	4.27	Move to section TRAINING FOR EMERGENCIES	For consistency.			Yes	Keep as in old NS-G-2.8.
61.	4.28	Continuing training should be carried out <u>at regular intervals on a regular basis, based on a systematic approach to training.</u> A programme should be conducted periodically for all <u>groups of</u> personnel whose <u>with</u> functions are important to the safe operation	For simplification			Yes	Keep as in old NS-G-2.8.

		of the plant. By means of continuing training based on a systematic approach, it should be ensured that levels of qualification and competence are maintained and upgraded when necessary. Continuing training or retraining may also include training to improve the career development potential of selected individuals. Continuing training should therefore be regarded as an integral part of the operation of a plant.					
62.	4.31	Move to Section 5 TRAINING PROGRAMMES	Para addresses training programmes specifically. For consistency.			Yes	Keep as in old NS-G-2.8.
63.	4.31	A training programme for emergencies should be established to train and evaluate plant staff and staff from external emergency response organizations in <u>confronting emergencies</u> , coping with them and maintaining and improving the effectiveness of the response. Exercises should be designed to ensure that plant staff and staff from other participating organizations possess the essential knowledge, skills and attitudes required for the accomplishment of non-routine tasks under stressful emergency conditions, Ref. Operational Limits and Conditions and Operating Procedures for Nuclear Power Plants, Safety Standards Series No. NS-G-2.2 [7].	Typo	Yes	Same as comment 4 from Egypt.		
64.	4.32	While the emergency assignments of plant personnel are based on their routine job assignments for normal operation, they should also receive specialized training relevant to the <u>accomplishment of non-routine tasks under stressful emergency conditions</u> duties they will have to perform in an emergency. <u>should also be delivered, in order to assess the effectiveness of the emergency response capability.</u>	Alignment with SSR-2/2 Revision 1 (and implicitly with GSR Part 7). There is significant duplication with para 4.33.			Yes	The DS497 is aligned with SSR-2/2 Revision 1. Keep as in old NS-G-2.8. Drills and exercises are emphasised in paragraph 4.33.

		<p>conventional safety, in particular in fire fighting and medical first aid. Periodic drills and exercises should be held to reinforce training and to assess the effectiveness of the emergency response capability. There should be full scale exercises involving external organizations such as the police, fire services, ambulance teams, rescue teams and other emergency services with extended aspects such as the need for corporate and national level coordinated arrangements and long-duration events [13].</p>					
66.	4.34.A	<p>Shift personnel and other on-site personnel involved in emergency response should receive training on accident management. and have knowledge and skills to respond to severe accidents effectively. Training materials should be developed and training should be implemented using the systematic approach to training (see Ref. [15]).</p> <p>Add footnote to IAEA Safety Glossary “plant states” terminology, to avoid confusion between accidents and severe accidents (terminology).</p>	<p>Deletion proposed for duplication reasons (SAT needs to be applied for all training, not just for accident management).</p> <p>According to SSG-54 accident management covers all accident conditions also those DEC with core melt. Any additional comment on severe accident should be in line with SSR-2/1 and SSG-54.</p>	Yes	<p>But, text modified as: Shift personnel and other on-site personnel involved in emergency response should receive training on accident management, including Design Extension Conditions.</p>	Yes	<p>This is out of the scope of the DPP.</p> <p>Not necessary now.</p>
67.	4.34	<p>Exercise scenarios at the plant Scenarios for <u>plant exercises</u> as well as simulator scenarios should be carefully prepared, including objectives, conditions for termination of <u>accidents</u> and reference sources. Furthermore, †The conduct of a plant exercises should not create any condition which could jeopardize plant safety, Ref. EPR-Exercise 2005 publication [12].</p>	<p>Proposal for simplification.</p>			Yes	<p>Keep as in old NS-G-2.8.</p>

68.	4.34	Please note an appropriate order of the paragraphs. Should be 4.34.B		Yes	4.34.A. will become 4.34 and 4.34 will become 4.34.A.		
69.	4.34.A	Shift personnel and other on-site personnel involved in emergency response should receive training on accident management and have knowledge and skills to respond to severe accidents effectively. Training materials should be developed and training should be implemented using the systematic approach to training (see Ref.[15]).	Repetition, and why only shift training? Clarity concentrate on training material here.			Yes	Comment 66 suggested to delete the end of the para. Comment 69 suggests to delete the beginning of the para. So, all the paragraph would be deleted. Moreover, the paragraph speaks not only about shift training. It speaks also about other on-site personnel.
70.	4.35	Move above 4.34 Supplementary training should be provided for those staff members who are required to perform specialized duties in the event of an accident. For example, t Topics such as nuclear safety analysis, applicable codes, standards and regulations, information on evaluation ed safety margins of the plant, symptom oriented procedures and accident management measures should be covered. The principal r Results of any probabilistic safety assessments of the plant, showing providing insight to the importance of plant systems in preventing damage or severe accidents, should be included in the specialized training programme.	For flow. Not any PSA, but the results of a PSA model of validated quality. The topic of this para is a specialized training, not the training programme.			Yes Yes	Keep as in old NS-G-2.8. This is out of the scope of the DPP.
71.	4.36	<u>Specific in depth training on Emergency Operating Procedures (EOPs) should be provided to overcome the degradation of operating personnel's performance, which can</u>	For logical flow of information (introduce topic, go from theoretical to practical).	Yes			

		<p>occur in stressful situations. <u>Classroom training should be included to ensure that personnel with special emergency assignments understand the conceptual basis, terminology and structure of the EOPs, and own roles and responsibilities in the implementation of EOPs.</u></p> <p>Plant emergency response using Emergency Operating Procedures (EOPs) should be practised in the simulator, to provide operating personnel with the necessary knowledge and skills to demonstrate competent emergency response actions. Specific in-depth training in EOPs should be provided to overcome the degradation of operating personnel's performance that can occur in stressful situations. In addition, classroom training should be included to ensure that personnel with special emergency assignments understand the conceptual basis and terminology and structure of the EOPs, and their own roles and responsibilities in the implementation of EOPs. More guidance on EOPs can be found in Ref. [7].</p>					
72.	4.38	<p>Specific training should be provided on the <u>procedures and guidelines and any related procedures</u> to be followed in any accident conditions (See Ref.[11]), as well as <u>conditions for emergency response including transition to EOPs and when the emergency plan is implemented.</u></p> <p><u>Operating personnel should be trained in recognizing situations in which the EOPs are not adequate and accident management procedures and/or guidance should be used.</u></p> <p>This training may be conducted in a combination of settings including simulation, emergency drills and classroom training. Control rooms <u>If simulators are usually not</u></p>	<p>Procedures before guidelines</p> <p>Practicing entry into EOPs is very important for operators, and approaches vary in accordance to national requirements and technology. Phrase from para 4.39 to keep topic in one para.</p> <p>For consistency of terminology</p>			<p>Yes</p> <p>Yes</p>	<p>Guidelines first because procedures are related to guidelines.</p> <p>Included in paragraph 4.39.</p>
				Yes	Add "severe".		

		<p>validated for accident conditions design extension conditions with core melting severe accidents, and increased caution great care is required in their use for the simulator-training in this scope of operating personnel in these conditions. The simulators could <u>may</u> be used in exercises for initial accident classification and decision making. Workstations and other advanced computer applications to simulate accident evolutions after core damage has occurred should be used to the extent practicable.</p>	<p>The full scope simulators at present for new NPPS should be validated also for DEC's with core melt.</p> <p>For simplification</p>				
73.	4.39	<p>Plant managers and senior operating personnel should be trained in directing plant staff; using available information, plant systems and equipment, <u>in order</u> to mitigate the consequences of severe accidents. Operating personnel should be trained in recognizing situations in which the EOPs are not adequate and accident management procedures and/or guidance should be used. The transition from EOPs to Severe Accident Management Guidelines (SAMGs) for severe accident conditions should be part of this training. Training exercises should be designed adequately to ensure that the decision making function is developed and clearly understood by the accident management team.</p>	<p>Removing duplication (see para and comment above) to maintain para 4.39 focused on management/decision making.</p>			Yes	Keep in paragraph 4.39 because keep as in old NS-G-2.8.
74.	4.41	<p>The training programmes in accident management should be reviewed periodically and updated as necessary to take account of new knowledge and in-house and external experience.</p>	<p>Delete in entirety. Duplication. All training needs to be periodically revised, plus new knowledge and insights from OPEX should be included – this is not a specific case. Additionally, the section addresses specific</p>			Yes	This is out of the scope of the DPP.

			training, not training programmes.				
75.	4.42	A general emergency training programme should also be provided for on-site staff who have no without emergency duties, to familiarize them for familiarization of all on-site staff with emergency procedures. with the procedures for alerting personnel to emergency conditions. Similar training, or at the minimum a well-structured information briefing, should be provided to contractor personnel or other temporary personnel.	Terminology alignment and consistency. Propose not to explicitly decrease level of training for contractors. Numerous reasons may be invoked, including responsibility of operator for people on-site and a more practical reason of not duplicating training material development efforts where not necessary (rules and procedures should be the same for everybody).	Yes	Added “emergency training programme” and removed “general”	Yes	For the rest of the comment, keep as in old NS-G-2.8.
76.	4.43	Training documentation consists of records, reports and feedback associated with the training programmes and with the trainees’ performance. <u>Training should be adequately documented and recorded, for an efficient control and overview of the training process and demonstrating personnel competence.</u> <u>Training records, including training support and evaluations.</u> The documentation should provide input to be used to assist the management for in monitoring the effectiveness of a training programme, as well as in an annual and to periodically confirm follow up by the management of personnel competence. They also should provide a historical record of the changes made to a programme as a result of evaluation and	Not only. Keep it generic. This is derived from clear requirements on management systems. Let’s not forget that records are the primary means of demonstration of competence to the regulatory body. Simple examples covering some of the potential uses of training records, for illustration of efficient and effective use and of impact of training function on the organization.	Yes	For the first part of the comment: “Training documentation should consist of ...”	Yes	For the rest of the comment, keep as in old NS-G-2.8.

		<u>feedback</u> . Training records should also be used to maintain and improve efficiency of the training process including procedures, guides, checklists and instructions.					
77.	4.44	The operating organization should maintain adequate records <u>documentation</u> of the training of individuals (including on the job training), of documenting the performance of individual <u>trainers and</u> trainees (including a list of main activities performed on the job) and of any formal authorization given or withdrawn . The documentation should include learning objectives, lesson and exercise plans, instructor and student reading support material, including On-the-Job-Training (OJT) guides, instructor and assessor evaluations <u>documentation</u> . The documentation <u>records</u> should:	For simplification and explicit inclusion of trainers and instructors in the monitoring. This reviewer prefers records and not documentation due to the explicit nature of requirements to document and track (thus creating records). Documentation is not necessarily of a compulsory nature. From this point of view, original version of guide was of a better quality.	Yes	Added “trainers” in “... the performance of individual trainers and trainees ...”	Yes	We defined “documentation” in paragraph 4.43, and documentation includes records.
78.	4.46	The administration, storage and safe keeping of records shall follow the requirements of the plant’s system for records and reports control, in accordance with <u>national and</u> any other applicable requirements [1].	Self-explanatory; the national background is the starting point.			Yes	“Any other requirements” includes national requirements.
79.	4.47	The training entity should report periodically to appropriate levels of management on the status and effectiveness of training activities. Significant events or <u>deficiencies</u> problems in training should be identified and reported when they occur.	Terminology.			Yes	“Problem” is broader than “deficiencies”.
80.	5.1	All new employees starting work at a plant should be introduced to the organization and their working environment in a systematic and consistent manner. General personnel training programmes should be designed and	Proposal is for simplification/clarity.			Yes	Keep as in old NS-G-2.8.

		<p>implemented to provide give new employees a basic understanding of their <u>individual roles and responsibilities for safety, and of safe and secure work practices, the importance of quality programmes and of following adherence to procedures, and the practical means of protecting themselves from radiation</u> the hazards associated with their work in the plant. <u>Hands on , including hands-on training in means of radiation protection that are common to all plant personnel should be provided to all those who for personnel to work in controlled areas. The amount of training to be provided on each topic should be commensurate with the individual's position and duties particularly those relating to safety. Training on</u> The basic principles of safety culture (Ref.[9]) should target <u>be taught to all employees and safety culture conscious attitudes should be fostered and encouraged.</u> and <u>Refresher training on general topics should also be periodically provided periodically.</u></p>	<p>Not needed. All employees should receive the induction/general training.</p>				
81.	5.1.A	<p>General induction training should be provided to each employee or contractor working on the NPP site. In general, it should address the following aspects:</p> <ul style="list-style-type: none"> — Introduction to plant organization and administration; — Nuclear safety principles; e.g. defence in depth — Safety culture and Management System; — Non-radiation safety: electrical safety, rigging and lifting, work in confined spaces, chemical hazards, use of personnel protection equipment, first aid; — Radiation protection and ALARA techniques ; 	<p>Please change physical security and access control to <u>Nuclear security including physical protection and information security</u></p>	Yes	<p>But only “nuclear security” because it is enough.</p>		

		<ul style="list-style-type: none"> — Foreign Material Exclusion — Fire protection, including fire prevention; — Environmental protection; — Use of Human Performance Tools; — Plant physical security and access control <u>Nuclear security including physical protection and information security;</u> — Emergency alarms, escape routes and assembly points. 					
82.	5.2	<p>Training programmes for most positions at the plant a nuclear power plant should include on the job training, to ensure that trainees obtain the necessary job related knowledge and skills in their actual working environment. Formal on the job training provides hands-on experience and allows the trainee to become familiar with plant routines <u>under qualified supervision and using job-specific training objectives, guidelines and trainee assessment.</u> However, on the job training does not simply mean working in a job and/or position under the supervision of a qualified individual; it also involves the use of training objectives, qualification guidelines and trainee assessment. This OTJ training should be conducted and evaluated in the working environment by qualified assessors, designated individuals.</p>	For simplification and consistency with safety guide style.			Yes	Keep as in old NS-G-2.8.
83.	5.3	<p>Training programmes should include <u>timely training in new technologies which are to be introduced to improve practices and results in operation and maintenance.</u> Suitable staff should be trained in rRoot cause analysis and theassessment of human and organizational factors <u>training should be implemented for relevant personnel, with the aim of creating, over a period of time, a pool of staff who can evaluate events objectively and make</u></p>	This reviewer does not agree with the information in the last para, in this particular context. Training does not have the goal to create pools of experts, training is an instrument in obtaining this pool of experts, along other			Yes	Keep as in old NS-G-2.8. Paragraph does not speak about experts.

		recommendations on how to avoid their recurrence.	tools. Pools of experts are usually created by implementing appropriate long-term planning (including succession planning) in line with solid qualification requirements.				
84.	5.4	Safety culture should be inculcated effectively <u>instilled</u> in all staff involved in safety related activities. All training programmes for specific plant activities should make reference to safety culture (see also paragraphs 3.4, 3.5 and 4.6). In particular, the need for a questioning attitude, a rigorous and prudent approach and an adequate capability for communication should be emphasized in connection with all safety related activities at the plant. Training programmes should stress the need for an <u>foster</u> the understanding of safety issues and should address <u>include</u> consideration of the possible <u>the safety</u> consequences for safety of <u>human</u> errors as well as applicable strategies for reducing <u>human</u> error. and should deal specifically with ways in which such errors may be avoided, or corrected if committed.	More direction to this guidance. Switched to a higher level of detail (more principle based). Used specific human error terminology.	Yes	For “human errors”, use the adequate terminology.	Yes	Keep as in old NS-G-2.8.
85.	5.6.A	Training programmes should include training for extreme situations enhancing traditional training methods, in order to increase organizations’ capabilities to cope with unexpected situations. Emotional concerns that can impact decision making and reduce personnel effectiveness during a natural disaster or nuclear accident should be considered. Training and guidance about the effects of psychological stress on responders in a difficult work environment (noisy, unlit,	Delete. This is addressed by emergency training, drills and exercises. Training and guidance on effects of psychological stress is part of medical assessment. Human error training covers the rest.			Yes	This paragraph is more developed than what can be found in section 4 about “emergency”; and alignment with SSR-2/2 Revision 1, para. 5.5.

		smoke-filled) or following a significant external event (plant damage, access prevented) should be provided for plant personnel who may experience this due to their duties.					
86.	5.7	Personnel specified by the operating organization should be made familiar with the features of deterministic and probabilistic safety analysis and risk informed applications as part of their training programme. Training of plant operators should ensure their familiarity with the symptoms of Design Extension Conditions and with the procedures for accident management. Simulators should represent the way in which an accident would evolve. If the available simulator facilities are inadequate, computer based training, classroom training and plant walkthroughs should be used to explain the consequences of an accident involving a seriously degraded reactor core.	Delete in full. Repetition of information from emergency training - The personnel specified by the organization would be those personnel with assigned duties concerning accident management and MCR operators (and not only) are included.			Yes	Important to keep the full paragraph also in Chapter Training Programmes.
87.	5.9	5.9. Deleted.	Remove if deleted.	Yes	Fonts, paragraph numbering, spelling, etc. will be checked and corrected by IAEA staff in the final editing process.		
88.	5.10	Aspects of training programmes that are specific to different functional groups of personnel are described in paragraphs 5.11–5.34. However, these should not be considered a complete set of topics to be presented to these groups of personnel in the training programmes.	Delete. No recommendation.			Yes	Keep for a helping/useful flow of information; this should be even more used.
89.	5.15 I do not see this in para 5.15	... including design extension conditions; from the main control rooms and when applicable from the supplementary control rooms.	Edit formatting to the previous sentence.			Yes	“from the main control room and supplementary

	5.16.A						control room” refers to all of the bullets. So, it is not linked only to the last bullet.
90.	5.37	<p>When reviewing and modifying training programmes the following sources of information on the effectiveness of training programmes and on factors influencing training needs should be considered but are not limited to.</p> <p>— feedback from:</p> <ul style="list-style-type: none"> • employees • line managers and supervisors • trainees • instructors • programme evaluations; <p>— operational experience, plant or industry events, root cause analysis and corrective actions;</p> <p>— problems in the training process, including failure of trainees in the assessments;</p> <p>— deficiencies in the performance of personnel;</p> <p>— team issues (relating to command, control and communication)</p> <p>— the need for maintaining operational expertise and corporate memory.</p>	<p>What is the difference of employees and trainees?</p> <p>All the same, we would use trainees.</p>	Yes	See paragraph 5.37.		
91.	Section TRAINING PROGRAMMES FOR THE TRAINEES	<p>TRAINING PROGRAMMES FOR THE TRAINERS</p> <p>And move either before or after section TRAINING PROGRAMMES FOR MANAGERS AND SUPERVISORY PERSONNEL.</p>	For logical flow.			Yes	This is out of the scope of the DPP.

92.	7.1	Formal authorization, as used in this guide, is the granting of written permission, for a person to conduct specified activities and to discharge specified responsibilities.	Delete. Use as footnote on the first use of the term, or for example in para 7.2. This is not a recommendation.			Yes	See comment 16 from Finland.
93.	7.2	The operating organization, in discharging its responsibilities for safe operation, should establish requirements and processes by which persons controlling or supervising changes in the operational status of the plant, or with other duties having a direct bearing on safety, should be authorized before they are allowed to perform these duties.	Rearrange sentence to be more understandable.			Yes	See comment 16 from Finland.
94.	7.3	7.3. The procedures referred to in paragraph 7.2 should provide for an assessment of the competence of persons to be authorized. This competence should specifically include a thorough knowledge of the established safety rules and regulations, knowledge of the particular plant and its safety systems, and the knowledge and skills, attitudes and behaviours, necessary to perform the assigned duties safely. <u>The operating organization should establish procedures that lead to authorization in compliance with regulatory requirements. These procedures should provide for an assessment of the capabilities of persons to be authorized, including successfully passing a comprehensive examination based on the training programme.</u>	Delete. There is no procedure referenced to in para 7.2 Replace by para 5.3. of NS-G-4.5			Yes	See comment 16 from Finland.

COMMENTS BY REVIEWER

Guide: NS-G-2.8

Reviewer: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)
 (with comments of RSK and GRS)
 Country & Organization: Germany

Page 40
 Date: 07/05/2019

RESOLUTION

Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for rejection
1.	2.7	It may be necessary to hire personnel externally if positions at the plant cannot be filled internally because of a shortfall of staff with the necessary level of education or appropriate experience. <u>When the formal requirements for experience cannot be met, consideration should be given to recruit personnel directly from schools, technical colleges and universities, etc.</u> Candidates with relevant qualifications and experience may be recruited from conventional power plants, design groups and nuclear research establishments, and may be given appropriate practical experience and training at a nuclear power plant under the guidance of experienced staff. Candidates from conventional power plants should be given due consideration for recruitment to direct operations and maintenance positions, because of their greater experience in routine operations and maintenance and their ability to cope with the needs of day to day operations.	We suggest to combine paras 2.7 and 2.8 as the specialized training is necessary for all external hired personnel. Also, personnel from conventional power plants need that.			Yes	Better clarity like this and meaning is a little bit different in 2.8.
2.	2.8	When the formal requirements for experience cannot be met, consideration should be given to recruit personnel directly from schools, technical colleges and universities, etc. Specialized training should be provided in theoretical disciplines as well as on the job through specific system, equipment and simulator training at the plant and at other organizations domestically and abroad. Whilst				Yes	Better clarity like this and meaning is a little bit different in 2.8.

		recognizing that this has many benefits for an organization (e.g. diversity), where personnel are recruited in this way, the extent of training required should be systematically assessed.					
3.	2.11	The prohibition of alcohol consumption and drug abuse should be strictly enforced. A testing programme to identify personnel with a tendency towards drug or alcohol abuse should be established. Personnel prone to drug or alcohol abuse should not be employed.	The general requirement in the sentence 1 and 3 is sufficient. Testing programs are ambiguous and could be legally void.			Yes	Keep as in old NS-G-2.8.
4.	3.10 Line 3	... The responsibility of ensuring that individuals remain appropriately qualified should rest with the operating organization, although individuals should <u>have to</u> accept some responsibility in maintaining and developing their own competence through continuing professional training.	Self-responsibility to maintain the own qualification is very important. The individual must have the right of initiative.			Yes	This is out of the scope of the DPP.
5.	3.18 Line 8	... Persons recruited for managerial positions should <u>additionally</u> have an educational background in administrative aspects and human resources management.	Without this addition it looks like that the requirements for managers are only based on an educational background in administrative aspects and human resources management.	Yes			
6.	3.28.A	Managers and technical support staff should have knowledge in nuclear safety principles, safety assessment techniques and human performance in order to be able to perform support activities and review work activities in the field. <u>The nuclear experience should be required for positions in operations and plant management because these specific attributes can be better acquired while working at a nuclear power plant or related nuclear facility. The minimum amount of nuclear experience required for operational and plant</u>	We suggest to place the second part of para 3.29 behind the new 3.28.A. Reason for this: current statement of para 3.29 is not directly related to safety culture and safety management, but to technical knowledge of plant management and other staff.			Yes	This is out of the scope of the DPP.

		<u>management roles at a nuclear power plant should be specified.</u>					
7.	3.29	In addition, safety culture and safety management experience are specific attributes to be taken into account in the selection and assignment processes for plant personnel. The nuclear experience should be required for positions in operations and plant management because these specific attributes can be better acquired while working at a nuclear power plant or related nuclear facility. The minimum amount of nuclear experience required for operational and plant management roles at a nuclear power plant should be specified.	Changes in para 3.29 according to comment above			Yes	This is out of the scope of the DPP.
8.	3.42 Line 3	... for an operating organization. <u>The external personnel have to be qualified and trained in the same depth and with the same quality as the plant staff for similar tasks with similar responsibility. ...</u>	If external staff has the similar responsibility and power as plant staff they have to fulfil the same requirements			Yes	This idea is addressed in paragraph 3.41.
9.	4.17 Line 2	... in supporting functions;. Therefore, before fuel is loaded at a...	Clarification: the “Therefore” should belong to the second sentence.	Yes			
10.	4.22 ff	INITIAL AND CONTINUING TRAINING Comprehensive training should comprise initial...	There is obviously a failure in the numbering. The first para. after the title “Initial and Continuing Training” has no number, it should be 4.22.	Yes	Fonts, paragraph numbering, spelling, etc. will be checked and corrected by IAEA staff in the final editing process.		
11.	4.38 Line 4	Control room simulators are usually not validated for accident conditions <u>design extension conditions with core melting</u> , and great care is required in their use for the training of operating personnel in these conditions.	The simulator has to be validated for design basis accident conditions. Otherwise the requirements of several paragraphs in this Safety Guide cannot be fulfilled.	Yes	Replaced by “severe accident”. See also comment 72 from Finland.		

12.	4.38 Line 9	Workstations and other a Advanced computer applications to simulate accident	We suggest to delete the term “workstations”, they not necessary must be used for such computer simulations any more.			Yes	But ok for “or” instead of “and”.
13.	5.6	Training programmes for managers, nuclear safety experts and technical specialists, control room operators and senior technicians should provide a thorough understanding of the basic principles of nuclear technology, nuclear safety and radiation protection, of the design intents and assumptions, and of the theoretical basis for plant activities, together with the necessary on the job training. The training programme for other operators and technicians and for crafts persons should have a more practical orientation, with explanations of the theoretical and safety related aspects. These training programmes should address the interface between nuclear safety and nuclear security to understand their requirements,	We guess that nuclear safety experts have appropriate qualification and do not need a training on the basic principles of nuclear technology.			Yes	The text does not say that they need a training on basic principles; it says that they should provide an understanding of the basic principles.
14.	5.9	Deleted. <u>Details of training program or their separate modules should be made available to the regulatory body if required.</u>	We suggest not to delete this para. The overview of the regulatory body may include also the assessment of the training program. We put the sentence back (see para. 5.9 from NS-G-2.8).			Yes	Please, see DDP: “All references to the involvement of regulators in the operational activities (commissioning, maintenance, operation, modification, etc.) currently available in the operational safety guides should be deleted.”
15.	5.29	Craftspersons craftsperson’s should undergo general employee training and overall plant training. The main objective should be to impart and develop the basic and specific skills required for work on the installed	We suggest to put this statement back – it was covered by the existing NS-G-2.8. We only suggest to use “mock-	Yes			

		equipment. Methods to achieve this objective could include attaching persons to suppliers of equipment and components and to construction groups. <u>Some basic skills may also be developed with the help of mock-ups.</u>	ups” instead of “simulators”.				
16.	5.37 Line 10	operational experience, plant or industry events, root cause analysis and corrective actions	We suggest to delete bullet point starting with “operational experience”. All bullet points of this para are related to human and organizational factors (or feedback). Operational experience is no information source for the effectiveness of training programs. Operational experience influences all training needs and it’s mentioning should therefore not be in this list but in a different paragraph (see e.g. 4.4).			Yes	A particular event in the plant can be a signal that a training programme is not (fully) effective. So, in this way, operational experience should be one of the sources to assess the effectiveness of training programmes. Moreover, this paragraph also addresses “factors influencing training needs”. And industry events may have an impact on training needs (Cf. Fukushima).
17.	5.37.A New bullet	... - <u>new or updated software</u>	After the Boeing? experience, this should be mentioned here (software is neither equipment nor procedures)	Yes			
18.	7. Title Apply to entire chapter	AUTHORIZATION <u>DELEGATION</u>	Use of the term “authorization” is not in line with the IAEA Glossary. Proposal use Synonym like “delegation”.			Yes	Paragraph 7.1 defines an “authorization, as used in this guide”. Furthermore, some “authorization” could

			Authorization should only be used, if the regulatory body grants this permission and not for a delegation within the operating organization.				be granted by the regulatory body (See also IAEA Safety Glossary).
19.	7.1	Formal <u>Authorization</u> , as used in this guide, is the granting <u>by a regulatory body or other governmental body</u> of written permission, for a person <u>or organization (the operator)</u> to conduct specified activities and to discharge specified responsibilities.	Authorization should only be used, if the regulatory body grants this permission and not for a delegation within the operating organization. See also our comment above.			Yes	See above.
20.	7.2	The operating organization, in discharging its responsibilities for safe operation, should establish requirements and processes by which persons controlling or supervising changes in the operational status of the plant, or with other duties having a direct bearing on safety, should <u>formally</u> be <u>delegated</u> authorized before they are allowed to perform these duties.	Use of the term “authorization” is not in line with the IAEA Glossary. Proposal use Synonym like “delegation”. Authorization should only be used, if the regulatory body grants this permission and not for a delegation within the operating organization – see our comments above. This is an example how the text can be changed. Other simple to re-word paras. In this chapter are not explicitly mentioned.			Yes	See above.
21.	7.4	Persons occupying positions referred to in paragraph. 7.2 should hold a formal authorization <u>delegation</u> .	This para is a good example to demonstrate the conflict in chapter 7.			Yes	See above.

			Who authorizes these people? The authority or the operating organization? There are (in some countries) some people who are authorized by the regulatory body (e.g. radiation protection responsible, shift supervisor) and some only by the operating organization. But these authorizations must be distinguishable in this guide. Therefore, we suggest to change to “delegation”.				
22.	7.5	Work <u>Contractor personnel working</u> on safety related structures, systems or components carried out by contractor personnel should be authorized and monitored by a representative of the operating organization who meets the competence criteria established for such work. <u>should have the required knowledge and competence before being allowed to perform these tasks. Plant personnel meeting the competence criteria established for such tasks have to closely monitor these works.</u>	The wording of this para. is inadequate (as it is also in the existing guide). We suggest to change in a current way.			Yes	This is out of the scope of the DPP. Original text is better, because the chapter is on authorization.

COMMENTS BY REVIEWER				RESOLUTION			
Guide: NS-G-2.8 Reviewer: _____ Page 46 Country & Organization: Hungary / MVM Paks NPP Ltd. Date: 15/04/2019							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for rejection
1.	4.8	4.8. It should be the responsibility of the plant manager <u>management (or senior managers)</u> ,	Some listed responsibilities are pertinent to senior			Yes	Plant manager has the global responsibility.

		with reference to each position important to safety, to ensure that:	manager positions other than the plant manager (specifically HR manager, Training manager, Directors, etc.)				
2.	4.14 2nd bullet	These objectives should be organized into a training plan <u>programme</u> ;	according to wording used also in IAEA-TECDOC-1057 (different from the plant's "training plan" in para 4.4)			Yes	"Plan" is appropriate in this case.
3.	4.19	DELETE	Duplication: a. It is covered in 4.15 (c); b. 4.19.A is adequate			Yes	Paragraph 4.19 addresses simulator training not only for control room shift team (as in 4.15 c) but also for responsible managers and technical support personnel.
4.	4.44, /4	The documentation should <u>reference</u> include ...	The subsection is about administrative docs related to training & qualification records of individuals. The administrative docs. should not include (contain) all the mentioned docs. which are mainly training materials.	Yes	But: The documentation should include or reference, such as: learning objectives, ...		
5.	5.3	5.3. Training programs should include training in new technologies which are introduced to improve practices and results in <u>all relevant plant activities</u> operation and maintenance.	First subject may refer to several areas/organizations, not only ops. + ma.	Yes			
6.	5.8, /1	Training programs should include training in conjunction with modifications to the plant, to	Modifications may concern several other	Yes	Without text between ()		

		ensure <u>that all concerned personnel (e.g. engineering, operations, maintenance, work management, supply chain)</u> are familiar with ...	areas, not only operations and maintenance.				
7.	5.24, /1	... maintenance personnel are qualified to operate <u>to perform maintenance and repair of the equipment on which they are assigned to work.</u>	Wording (maintenance personnel basically are not “operating” plant equipment.)	Yes	“to work on the equipment which they are assigned”.		

COMMENTS BY REVIEWER				RESOLUTION			
Guide: NS-G-2.8 Reviewer: Page 48 Country & Organization: Japan / NRA Date: 09/05/2019							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for rejection
1.	7.1	Formal authorization, as used in this guide, is the granting of written permission, for a person to conduct specified activities and to discharge specified responsibilities <u>by the operating organization.</u>	Clarification: the term “AUTHORIZATION” means regulatory practice in publications related to IAEA Safety Glossary 2016. However,			Yes	See also resolution of comments from Finland and Germany.
2.	7.6	As a minimum, the persons who occupy the following positions should be formally authorized <u>by the operating organization:</u>	authorizations described in Sec.7 are activities of operating organizations, and then suggested to be clarified.			Yes	See also resolution of comments from Finland and Germany.

COMMENTS BY REVIEWER

Guide: NS-G-2.8

Reviewer:

Page 49

Country & Organization: South Africa / National Nuclear Regulator

Date: 13/05/2019

RESOLUTION

Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for rejection
1.	1.3 Line 1&2 Page 4	Rephrase to “”factors that should be considered:	Incorrect Grammar	Yes	Without capital letters.		
2.	General	Consistency in the use of capital letters for Safety Culture/Safety Guide throughout the document	Consistency in Capitalisation of words	Yes	But only one “ <u>S</u> afety <u>C</u> ulture” found in the Ref.[9] (paragraph 3.42): no change because the title of this reference (INSAG-4) is “ <u>S</u> afety <u>C</u> ulture”; additionally, all guides have been checked (no pb).		
3.	2.9 Line 3 Page 7	Space between “Schedulesto”	Typo	Yes			
4.	2.9 Line 8 Page 7	However, vacancies also arise through personnel leaving or moving to other positions, or through premature retirement or death or illness.	Suggestion for additional text			Yes	Do we have to emphasise on that? Not sure.
5.	2.20 First sentence Page 9	Suggestion to shorten the sentence.	Readability - comprehension			Yes	This sentence is not so long. Keep as in old NS-G-2.8.
6.	3.28 The number is repeated Page 16		Repetition of paragraph			Yes	No repetition: there is 3.28 and 3.28.A
7.	3.40	Suggestion to add “During the period of the contracted work, personnel qualifications	Contract workers such as welders or crane			Yes	This is out of the scope of the DPP.

		should be valid for the entire duration or should be requalified”.	drivers usually have qualifications that need requalification within a prescribed time, e.g. 3 years. This is usually overlooked by operating organizations.				Original text enough clear.
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COMMENTS BY REVIEWER				RESOLUTION			
Guide: NS-G-2.8 Reviewer: Muhammad Shamshad Country & Organization: Pakistan/PAEC/CHASCENT-CNPGS				Page 50 Date: 26/06/2019 Deadline: 31/05/2019			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for rejection
1.	3.2	The operating organization should ensure that all personnel who <u>are</u> * required to perform duties that affect safety have a sufficient understanding of the plant and its safety features and sufficient other competences, such as management and supervisory skills, to perform their duties safely. * “is” is written in the draft	Grammatical / Editing improvement	Yes			
2.	5.32	All staff of the training entity, as well as simulator and technical support engineers, technicians and instructors, should be given training commensurate with their duties and responsibilities. In all cases the training should be subject to some form of quality control. Instructors should also be allowed the time necessary to maintain their technical and instructional competence, by secondment or attachment to an operating plant on a regular basis, and by continuing training. The operating organization should	To improve the quality & effectiveness of training			Yes	Covered by 3.28.

		<u>also advise a mechanism to rotate job assignment of training entity and plant working section personnel. This will help in refreshing skills of training personnel and knowledge sharing by experience plant personnel.</u>					
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