

DS474: Arrangements for the Termination of a Nuclear or Radiological Emergency

Version 1 dated 10/05/2017

Country/Org.	COMMENTS RECEIVED				RESOLUTIONS			
	Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
Canada	1.	General	Comments have been appropriately taken into account.		✓			
Germany	2.	General	Germany's comments have been appropriately taken into account		✓			
Germany	3.	General	In the document the abbreviation "y" is used for year. This abbreviation should be replaced by "a" (e.g., Para. 4.39, 4.86, 4.87, 4.92, I-32, I-38, I-58, and I-77). In addition, in some paragraphs the wording "per year" is spelt in full (Para. 4.56, 4.60, 4.64, Table I.1, footnote 49). A uniform formatting should be used here.	Editorial: The official abbreviation for "year" is "a" according to page 39 of the IAEA STYLE MANUAL FOR PUBLICATIONS AND DOCUMENTS IN ENGLISH 2005 Edition	✓			Completed during the technical editorial review in line with the IAEA Style Manual.

Japan	4.	General	<p>This document still deals with too much on the urgent and early protection activities during the emergency response phase. Considering the revision of GS-G-2.1 (DS504), it should focus on arrangements on the termination of the emergency in line with the objectives and be easy to read for emergency managers. In this context the Section 3 is excellent.</p>	<p>As described in 1.6 and 1.15 of OBJECTIVE, the objective is to provide guidance and recommendations on developing arrangements for the transition to either an existing exposure situation or a planned exposure situation, and the termination of the emergency. However, as described 1.15 of OBJECTIVE, it provides guidance for the integration and coordination of activities from the emergency declaration until its termination. These objectives should be accomplished.</p>		✓	<p>Section IV of the document provides the guidance for Member States to prepare as part of overall emergency preparedness so that they can meet the prerequisites contained in Section 3 when needed. Section IV provides clarity on the situation to be inherited at the end of the emergency response phase for the sake of facilitating proper understanding of the relation of this guidance with those provided in GS-G-2.1 and GSG-2 and integration of the overall emergency response. Some topics may not be necessarily too specific for the transition phase and may also be part of GS-G-2.1 but removing this guidance from</p>
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								DS474 will render the DS474 incomplete and not a standalone guidance by the time GS-G-2.1 revision is issued (which will take 4-5 years). Thus, it is necessary to include all the guidance needed to support the activities in the transition phase in DS474 in the light of past experience.
Japan	5.	General	Duration of each phase is no more than a single example and we should avoid giving fixed idea on phase period to the readers. In that sense, it is necessary to pay close attention to show phase duration.	As described in 2.3, the introduction of different phases is intended to support the planning efforts.	✓			This is clarified in paragraphs 2.10, 2.11 and 3.24.

France	6.		<p>It should be underlined that the choice to deal with the arrangements for the termination of an emergency through a qualitative approach and not a quantitative approach (at least in the text) is the good choice.</p> <p>The global approach of the Guide, however, appears to be very mechanistic and probably too theoretical. Many general prerequisites are identified in section 3 for the termination of the emergency. They are related to the source, the response organizations, the responders, the victims, the waste, the information to the public, etc. Further, specific prerequisites are also identified for the transition to either a planned exposure situation or an existing exposure situation (also in section 3). And it is explained in both section 2 (§2.1) and 3 (§3.3) that these prerequisites should be fulfilled before the termination of the emergency can be declared. It is also explained in section 2 that the transition phase is devoted to the compliance with the prerequisites. This approach gives the impression that the termination of the emergency is an end in itself, decided after checking that the identified prerequisites are fulfilled, with a clear line between the emergency and the recovery. This approach is in contradiction with the paragraphs 2.4, 2.13 and 2.14 and does not fit with the lessons from the experience of both Chernobyl and Fukushima.</p>	Critical review		✓		<p>This balance is derived from the reality from past experience.</p> <p>The prerequisites have been derived from studying past emergencies including the Fukushima Daiichi and Chernobyl accidents but also other emergencies. They rather reflect the practical approach from past experience than a theoretical approach (such as the one applied by ICRP in its 103 Recommendations). Some of the past emergencies which were analyzed are described in the case studies provided in Annex I of DS474. The findings from these case studies are supporting the guidance provided in this safety guide. While there will be an end of the emergency, this does not mean that this is an end of any effort that might be needed to further protect the public and to resume normal social and economic activity. However, such further efforts may not necessarily be needed to be taken in the framework of an emergency exposure situation but in the framework of existing exposure situation as required in GSR Part 3 and GSR Part 7. As noted, this is highlighted in many</p>
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			<p>The section 2 is related to the phases of a nuclear or radiological emergency. It is going further than what is internationally agreed and several aspects are questionable:</p> <ul style="list-style-type: none"> - The definition of the transition phase in §2.1, focused on the process and the time period during which there is a progression to the point at which an emergency can be terminated, is too simplistic. The transition phase is a bridge between the emergency phase and the long-term recovery phase. A decision is needed to start the recovery phase. However, the response is characterized rather by continuity than by breaks (see § 2.4, 2.13, 2.14). <p>- A distinction is made between several types of protective actions (early protective actions, urgent protective actions, precautionary urgent protective actions, mitigatory actions and other actions) in order to divide the emergency phase into two new sub-phases: urgent response phase and early response phase. This way is unclear</p>					<p>places in DS474 and further guidance in this regard referenced. However, providing further guidance and recommendations for managing the existing exposure situation goes beyond the scope of DS474. This is in line with approved DPP.</p> <p>The concept is defined on the basis of internationally agreed concepts which are part of the IAEA Safety Standards Series ('nuclear or radiological emergency', 'emergency phase', 'emergency exposure situation', 'existing exposure situation', 'urgent/early protective action' etc.). Correctly, the transition phase is the period when you end the emergency and move to long term recovery operations. The phases are defined for planning purposes rather than to present reality of responding to the emergency in different phases. This is clarified in paragraphs 2.3 and 2.4 of DS474.</p> <p>The distinction among different types of protective actions is done within IAEA Safety Standards such as GSR Part 7 and GSR Part 3 as well as GSG-2. They are used as defined and/or</p>
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		<p>and more confusing than helping.</p> <p>- These two new sub-phases are separated by a characterization of the situation according to §2.10 while the characterization of the situation is a prerequisite of the recovery phase and is generally considered to be performed in the transition phase. The §2.11 related to the transition phase is talking about detailed characterization of the situation. This issue is also confusing.</p>					<p>used in these Safety Standards publications in line with the concept of emergency phase which was part of the IAEA Safety Glossary long before the recent Safety Standards were published and DS474 was developed. For those aware of these publications and concepts, the approach in DS474 was commended to provide clarity on how the new concepts of exposure situations and transition related to earlier use of emergency and emergency phase.</p> <p>DS474 applies for any nuclear or radiological emergency irrespective of the cause. This includes severe nuclear accidents as well as small scale radiological emergencies as mentioned earlier. Thus DS474 calls for application of a graded approach in applicability of the prerequisites to specifics of a range of postulated nuclear or radiological emergencies at national level (para. 3.1 of DS474). For such a small scale emergencies (please note para. 1.12 of DS474) there will be not necessarily any changes in the exposure situation to the public after the emergency as compared to the one that existed prior</p>
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			<p>Finally, the whole section 4 – which is very long – is more related to the response than to the termination of the emergency phase. The Guide should be drastically shortened accordingly.</p>				<p>to the emergency. Thus, return to planned exposure situation is possible as seen in the past and evident from two of the case studies in Annex I of DS474. This is in line with Requirement 18 of GSR Part 7.</p> <p>The guidance provided in Section IV relates to various arrangements to be put in place at the preparedness stage for the transition phase. Although some of the aspects are not only specific to the transition phase, they are addressing all of the prerequisites in Section 3 and provide for user friendly and a standalone (to extend possible) safety guide. Some guidance is kept to provide clarity on the situation to be inherited at the end of the emergency response phase for clarity to those who are not aware about other existing guidance such as GSG-2 and GS-G-2.1 and for ensuring continuity of the emergency response effort. This approach was appreciated and welcomed at the Technical Meeting held on this Safety Guide during its development and at its earlier stages of approval.</p>
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UAE	7.	General	<p>Technical Volume 5, discussed Post-Accident Recovery Definition of ‘normality’? Definition of Recovery means the achievement of conditions within which society can again fully function, as:</p> <ul style="list-style-type: none"> • Stabilization of the damaged reactors leading towards eventual dismantling; • Remediation of affected areas to reduce radiation doses to people to an acceptable level; • Effective and safe management of contaminated material and radioactive waste leading to its ultimate disposal; and • Re-establishment of infrastructure and the revitalization of communities. <p>https://www.iaea.org/sites/default/files/technical-volume-5-williams.pdf</p>	Definitions is required for phases - clarity		✓		<p>The transition phase is defined in Section 2 together with other important concepts and phases in the context of this Safety Guide. The long term recovery subject in TV5 goes beyond the scope of this Safety Guide and thus, introducing the concept as proposed here is obsolete. Please note para. 1.13 (b) of the Scope section of DS474. This is also repeated throughout the draft for clarity.</p>
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UAE	8.	1.3/7	<p>Transition to the new normality either an existing exposure situation or a planned exposure situation (new normality)</p> <p>And consequently to delete footnote 3.</p>	<p>Otherwise we are defining one more term which in any case is used only one more time along the document.</p> <p>If this suggestion is accepted similar change should be made on 4.191</p> <p>This comment is related to comment 20 in the table of resolution.</p>			✓	<p>Clarity is provided in the footnote of what the new normality in this context is. The exposure situations are defined in the following paragraphs and thus, they are not used earlier in the main text unless reference is made to Safety Standards. This approach is in line with IAEA Style Manual.</p>
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UAE	9.	Footnote 7	<p>From the definitions, it is obvious that each emergency exposure situation is caused by a nuclear or radiological emergency; however, each nuclear or radiological emergency does is not necessarily cause an emergency exposure situation.</p>	Clarity			✓	<p>The proposed change is not consistent with the terminology and concepts established in IAEA Safety Standards (primarily GSR Part 3) and IAEA Safety Glossary. The emergency exposure situation and the nuclear or radiological emergency are both ‘situations’ caused by an event (either as accident or incident) that require prompt action. Making the relation that they initiate each other is not appropriate.</p>
UAE	10.	New footnote 13	<p>This means the source is brought under control no that further significant</p>	<p>The text suggested to be deleted is already mentioned in the main body.</p> <p>This comment also relates to comment 20 in the table of resolution.</p>			✓	<p>The footnote is consistent with para. 3.7 and given for clarity before prerequisites are further discussed.</p>

Japan	11.	2.8	The order of explaining each protective action should be reconsidered. For example, Urgent protective action will be before Early protective action. A precautionary protective action will be before urgent protective actions.		✓			
Czech Republic	12.	2.8.	– Urgent protective action: A protective action in the event of an emergency which must be taken promptly in the event of an emergency (usually within hours to a day after assessing the arising emergency exposure situation) in order to be effective, and the effectiveness of which will be markedly reduced if it is delayed.	Present definition for urgent protective action and precautionary urgent protective action has the same meaning.			✓	The definition is established in GSR Part 7 and reproduced only in DS474 consistently. As such, it cannot be revised.

Czech Republic	13.	2.10.	For the purposes of this Safety Guide, the emergency response phase is divided into an urgent response phase and an early response phase (see Fig. 2.1) as follows:	Timing of precautionary urgent protective action within the emergency response phase is missing on the Fig. 2.1.			✓	Precautionary urgent protective actions are urgent protective actions by definition (see GSR Part 7) and the timing for urgent response phase applies. They differentiate from other urgent protective actions as per when they are taken and how, i.e. precautionary urgent protective actions are urgent protective actions taken before or shortly after the release/exposure on the basis of prevailing conditions.
UAE	14.	New footnote 19	Typo error at the beginning of sentence	.	✓			

France	15.	2.11	Editorial, lack of clarity	<p>For the purposes of this Safety Guide, the transition phase is the period of time after the emergency response phase¹³, when :</p> <ul style="list-style-type: none"> - the situation is under control (see para. 2.9), - detailed characterization of radiological situation has been carried out, - activities are planned and implemented to enable the emergency to be declared terminated. <p>The activities during this phase aim at achieving the primary objective and the prerequisites elaborated in Section 3. This phase may last from days to months; notwithstanding that for small scale emergencies (for example, a radiological emergency during transport or radiological emergencies involving sealed</p>	✓			
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				<p>dangerous sources) it may last not more than a day. The termination of the nuclear or radiological emergency marks the end of the transition phase in a particular area or a site and the beginning of either an existing exposure situation or a planned exposure situation (see Fig. 2.1).</p>				
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France	16.	2.11	The AIEA “transition phase” doesn’t tally the French post-accidental doctrine which is declared by the end of the emergency.	(None)	✓			<p>Correct, the concept of transition phase does not correspond to any particular usage of such term in any Member State. It actually builds upon the established terminology within IAEA Safety Standards Series such as emergency phase, emergency exposure situation and existing exposure situation. This is explained in Section 1 and particularly Section 2 of DS474.</p> <p>In general terms, the concept is consistent with the transition period of the post-accident phase provided in the French post-accident doctrine. However, please note that DS474 applies for any nuclear or radiological emergency irrespective of the cause. The concept of transition phase reflects this and accounts for severe reactor accidents as</p>
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								well as small scale emergencies such as loss of dangerous source or emergency resulting from medical accidental overexposures. On the other hand, the French post-accident doctrine, addresses only nuclear accident of medium scale and direct comparison might not immediately bring clarity on the relation between these two terms or concepts. Some differences between the concepts are influenced by how the end of emergency phase is defined in the IAEA Safety Standards (before DS474 was developed and it is part of IAEA Safety Glossary and reproduced in DS474, Section 2) and in the French post-accident doctrine. However, these are not inconsistencies of a scale that compromises either of the approaches.
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Japan	17.	P.9 Fig 2.1, Fig 2.2	Fig 2.1 and 2.2 should be combined.	The relationships between different phases and types of protective actions are easy to understand.			✓	The relationship is explained in the text and it is represented in the figure. To avoid complicating the figure in one, the figures are kept separately.
UAE	18.	2.12	... the transition phase is not driven by urgency and allows for implementing or revising ?? planning, justifying and optimizing future protection strategies and for consultation with interested parties.	As per GSR Part 7 (4.27) protection strategies are developed, justified and optimized at preparedness phase. As it is written, it contradicts this para. Adding revising may be in line with 4.31 (g) in GSR Part 7. This comment also applies to other references in the document about protection strategy This comment is related to comment 101 of table of resolution		✓ Changed to: "... adapting, justifying and optimizing protection strategies as the emergency evolves and for..."		For consistency with Section IV of DS474. Please also note Canada's response with acceptance of the resolution of the referred comment.

Czech Republic	19.	2.13. Fig.2.2		<p>Timing and content of the precautionary urgent protective action and urgent protective action is the same. What is practical reason to use these two definitions?</p>			✓	<p>Precautionary urgent protective actions are urgent protective actions by definition (see GSR Part 7) and the timing for urgent response phase applies. They differentiate from other urgent protective actions as per when they are taken and how, i.e. precautionary urgent protective actions are urgent protective actions taken before or shortly after the release/exposure basis of prevailing conditions.</p>
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UAE	20.	Section 3	3. PRIMARY OBJECTIVE AND PREREQUISITES TO TERMINATE THE EMERGENCY	Consultation with interested parties. Such as “Transboundary” release that could be of radiological safety significance for another State should be considered.	✓			Covered with para. 3.18. In addition, identification of who these interested parties are is addressed in 4.204 to 4.206. Please also note the definition of interested parties in GSR Part 3 and the IAEA Safety Glossary.
Japan	21.	3.4	What is the relationship between termination of the emergency exposure situation and termination of the emergency? This document should define this relationship.	As described In this paragraph, the decision to terminate the emergency exposure situation will likely take place at different geographical areas or at different parts of the site at different points in time. The termination of the emergency covers termination of emergency exposure situations at all areas?	✓			This relationship is clarified in para. 2.14.

UAE	22.	3.14/ 3.18	<p>Non-radiological consequences (psychosocial, economic) and other factors (technology, land use options, availability of resources, community resilience²³, and availability of social services) relevant to the termination of the emergency should be identified and actions to address them considered.</p> <p>/Prior to the termination of the emergency, the following should be communicated to the public and other interested parties, as appropriate:</p>	<p>For such activity Community centers to be established for effective communication.</p>	✓			<p>Public support centers are addressed in Section IV in relation to supporting the public to cope with adverse psychosocial and psychological consequences. However, further guidance on public communication during the transition phase will be given in the Safety Guide DS475 on Public communications in EPR in line with para. 1.15.</p>
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Norway	23.	3.16	“A strategy for the management of the waste from an emergency, if appropriate, should be developed in the preparedness stage and whenever necessary adjusted prior to the termination of the emergency”	As waste management can become a tremendous challenge, it is important to be prepared and have a plan for this before the emergency arises.		✓		The prerequisite in para. 3.16 was kept as it is for simplicity and consistency with IAEA Safety Standards GSR Part 5 and GSR Part 7 where the requirements for a strategy and policy for radioactive waste managements are provided. However, the preparedness aspects of dealing with waste in an emergency are elaborated in Section IV, paras. 4.178 to 4.196, in line with the reasoning in this comment.
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Japan	24.	P.17	The title of the section 4 should be changed to “ARRANGEMENTS FOR THE TERMINATION OF EMERGENCIES”			✓	These are arrangements as part of overall preparedness for the transition phase in order to enable the emergency to be terminated. This is consistently used with Section 2 and thus kept.
Czech Republic	25.	4.5.	In the urgent response phase, the discharge of authority and assumption of responsibilities in the emergency response is, to the extent possible, straightforward and based on pre-planned arrangements. This allows for effective implementation of precautionary urgent protective actions and urgent protective actions. Thus, the input from different organizations required in the decision making process regarding the emergency response actions warranted during the urgent response phase will be limited.	Precautionary urgent protective actions and urgent protective actions are in practice the same protection actions. Difference between them is only from the point of view of areal zoning and from the point of view of different types of possible health consequences of exposure (deterministic and stochastic). There is no pragmatic benefit to use two different terms for the same protective actions. Instead of precautionary urgent protective actions I recommend to use text urgent protective actions in Precautionary Action Zone.		✓	The use is consistent with GSR Part 7.

Australia	26.	Former 4.20 (deleted)	Whilst it is agreed that additional information on the Hazard Assessment is out of scope for this particular document (and hence the deletion), the clarity provided is useful. This information should be included in the EPR Series Document on <i>Development of a Protection Strategy for a Nuclear or Radiological Emergency</i> .	Information is useful and should not be lost.	✓			
Australia	27.	Between 4.52 & 4.53	Suggest the inclusion of a graph to demonstrate application of reference level over time.	Application of reference level and use of projected and residual dose is complex, and can be simplified by graphical representation.		✓		Detailed information and representation will go beyond the scope of DS474. However, this is intended to be elaborated in detail in the EPR Series Document on <i>Development of a Protection Strategy for a Nuclear or Radiological Emergency</i> . As this document is intended to be finalized in parallel to DS474, such information is best to be kept there and then later to form a part of GSG-2 when revised.

Australia	28.	Footnote 42	<p>Final Sentence: “For residual doses used during the response, the total dose includes the dose received from all exposure pathways and the doses expected to be received in future, with account taken of the protection strategy implemented, if any.”</p> <p>Suggested revision; “For doses used during the response, the total dose includes the dose received from all exposure pathways (residual dose) and the doses expected to be received in future (projected dose), with account taken of the protection strategy implemented, if any.”</p>	<p>The final sentence is unclear and uses confusing terminology. “Doses expected to be received in the future” are usually referred to as projected doses, however they are captured here under the term “residual dose”.</p>		<p>✓ “For doses used during the response, the total <u>residual</u> dose includes the dose received from all exposure pathways (<u>received dose</u>) and the doses expected to be received in future (<u>projected residual dose</u>), with account taken of the protection strategy implemented, if any.”</p>		<p>For consistency with the concepts.</p>
Australia	29.	Footnote 45	<p>This should be included in the reference list and referred in the text, not as a footnote.</p>	<p>Consistency</p>		<p>✓</p>		<p>Reviewed by the Technical Editor. It is in line with IAEA Style Manual.</p>

	30.	Section 4, P. 44-46	The part of CHARACTERIZATION OF THE EXPOSURE SITUATION should be forwarded before the part of PROTECTION OF THE PUBLIC in Section 4.	As described in GENERAL PREREQUISITS and Fig. 4.1, the characterization is a most important and urgent step to terminate the emergency.			✓	The order of subsections in Section IV is not by importance or urgency. The guidance in this Section applies for the preparedness stage. As such, having clear understanding on the strategy to protect the public and workers is essential to understand what the characterization should encompass. Thus, keeping it after the section on protection of the public is more appropriate.
Australia	31.	Section on Medical Follow-up from 4.157	Reference should be made in this section to the EPR Series document “Generic Procedures for Medical Response During a Nuclear or Radiological Emergency”.	Supplementary advice	✓			

Norway	32.	4.182/1	“...take into account the complexity of the characteristics, <i>including volume</i> , of radioactive waste generated during the emergency,...”	Volume is an important factor as it can be several factors higher than “normal” waste flow.	✓			
Norway	33.	Annex II/ Table II/row “Waste”	“The cost of waste treatment should be evaluated.”	The cost is an important factor to consider.	✓			Addition is made as an example in the row of the Table dealing with economic aspects as a factor and, in particular, under indirect costs.