

DS462

Amendments to the IAEA Safety Requirements:

- GSR Part-1 on Governmental, Legal and Regulatory Framework for Safety
- **NS-R-3 on Site Evaluation for Nuclear Installations**
- SSR-2/1 on Safety of Nuclear Power plants: Design
- SSR-2/2 on Safety of Nuclear Power plants: Commissioning and Operation
- GSR Part 4 on Safety Assessment for Facilities and Activities

Status

STEP 10: Second internal review

Below the text submitted to the MS for comments, you will find the set of individual comments and then the individual answers

The overall resolution is to be found on the right column, highlighted in yellow

Lessons learned	Current text	Proposal for MS consultation	Proposed resolution of MS comments after NUSC WG meeting Track changes version, compared to what was submitted to the Member States for comments		
Country X Number of the comment	Proposed text	Rationale	Accepted	Accepted with modification	Rejected and reason
Country Y Number of the comment	Proposed text	Rationale	Accepted	Accepted with modification	Rejected and reason

In some cases, there are proposal for additional amendments not initially proposed by the IAEA. They are highlighted in Blue

Amendments to NS-R-3

Lesson learned	Current text	Proposal for Member States consultation	Proposed resolution of MS comments	
Russia 8	Placement of paragraphs in document DS462 for which changes are offered and changes itself are grouped in the order of the lessons learned therefore the sequence of paragraphs has chaotic character that is inconvenient for the reader. It is seems being more correct to have paragraphs on a sequence of their numbers.			Too difficult now as some boxes include paragraph at different places of the document. But agreed that this would have been better
		No initial IEA proposal		
USA 1 (JLD)	2.11 The potential for interactions between nuclear and non-nuclear effluents, such as the combination of heat or chemicals with radioactive material in <u>liquid facility</u> effluents, shall be considered.	Why limit to only liquid?		Not relevant to Fukushima - dropped
Additional modification for consistency not related to Lessons Learned	1.9. Previous safety standards on this subject related to land based stationary thermal neutron power plants. This Safety Requirements publication has been extended to cover a more comprehensive range of nuclear installations: land based, stationary nuclear power plants and research reactors, as well as nuclear fuel cycle facilities, including but not limited to enrichment plants, processing plants, independent spent fuel storage facilities and reprocessing plants. In some instances in this publication a requirement is stated to apply to nuclear power plants. In these cases, the requirements are most appropriate for nuclear power plants, but they may also apply to other nuclear installations.	1.9. Previous safety standards on this subject related to land based, stationary thermal neutron power plants. This Safety Requirements publication has been extended to cover a more comprehensive range of nuclear installations *: land based, stationary nuclear power plants and research reactors, as well as nuclear fuel cycle facilities, including but not limited to enrichment plants, processing plants, independent spent fuel storage facilities and reprocessing plants. In some instances in this publication a requirement is stated to apply to nuclear power plants. In these cases, the requirements are most appropriate for nuclear power plants, but they may also apply to other nuclear installations. <u>Footnote referring to the revised definition of nuclear installations in the Safety Glossary</u>	1.9. Previous safety standards on this subject related to land based, stationary thermal neutron power plants. This Safety Requirements publication has been extended to cover a more comprehensive range of nuclear installations, <u>though with use of a graded approach on the basis of the radiological risk they pose to the population and the environment</u> . In some instances in this publication a requirement is stated to apply to nuclear power plants. In these cases, the requirements are most appropriate for nuclear power plants, but they may also apply to other nuclear installations. 1	
Germany NS-R-3 1	1.9 ... In some instances in this publication, a requirement is stated to apply to nuclear power plants. In these cases, the requirements are most appropriate for nuclear power plants, but they may also apply to other nuclear installations <u>using a graded approach on the basis of their potential radiological and non-radiological hazards. For sites at which nuclear installations of different types are collocated, particular consideration shall be given to the use of a graded approach so that site evaluation is commensurate to the most hazardous nuclear installation.</u>	Use of graded approach is recommended in site evaluation, in accordance with the Draft Specific Safety Guide DS433 "Site Survey and Site Selection for Nuclear Installations" (revision of 50-SG-S9; draft version dated 20 August 2013). The basis for grading the application of the requirements should also be addressed in the context of this Para.	Accepted	
Japan 2	1.9 4 th sentence In these cases, the requirements are most appropriate for nuclear power plants, but they may also apply to other nuclear installations <u>using a graded approach.</u>	Keep "using a graded approach" as the IAEA proposal on June 7 th with the resolution table for the committee meetings.	Accepted	
Additional modification for consistency not related	1.13. This publication is concerned mainly with severe events of low probability that relate to the siting of nuclear installations and that have to be considered in designing a particular nuclear installation. If events of lesser severity but higher probability make a significant contribution to the overall risk, they should also be considered in the design of the nuclear installation.	1.13. This publication is concerned mainly with severe events of low probability that relate to the siting of nuclear installations and that have to be considered in designing a particular nuclear installation. If events of lesser severity but higher probability make a significant contribution to the overall risk, they will should also <u>need to</u> be considered in the design of the nuclear installation.	1.13. This publication is concerned mainly with severe events of low probability that relate to the siting of nuclear installations and that have to be considered in designing a particular nuclear installation. If events of lesser severity but higher probability make a significant contribution to the overall risk, they will also need to <u>shall</u> be considered in the design of the nuclear installation.	

¹ Note for SSCs information: the fully revised NS-R-3 (DS484) will include a more detailed list of installations covered by the document

DS462 Amendments to GSR Part 1, NS-R-3, SSR-2/1, SSR-2/2 and GSR Part 4 – MS comments resolution

to Lessons Learned					
Germany NS-R-3 2	1.13 This publication is concerned mainly with severe events of low probability that relate to the siting of nuclear installations and that have to be considered in designing a particular nuclear installation. If events of lesser severity but higher probability make a significant contribution to the overall risk, they will shall also need to be considered in the design of the nuclear installation	To make the requirement stronger. If there is a significant contribution it shall be considered in the design.	Accepted		
Finland NS-R-3 1	1.13. This publication is concerned mainly with severe events of low probability that relate to the siting of nuclear installations and that have to be considered in designing a particular nuclear installation. If events of lesser severity but higher probability make a significant contribution to the overall risk, they will also need to be considered in the design of the nuclear installation.	Delete will	Accepted		
Additional modification for consistency not related to Lessons Learned		Changes from “should” to “shall” to be incorporated in 2.1, 2.7, 2.8, 2.11, 2.13, 2.15, 2.18 (two should), 2.20, 3.53, 4.8, 4.11, 4.14, 6.3, 6.4	Changes from “should” to “shall” to be incorporated in 2.1, 2.7, 2.8, 2.11, 2.13, 2.15, 2.18 (one two should), 2.20, 3.53, 4.8, 4.11, 4.14, 6.3, 6.4		
Canada 2	2.18 It shall should be noted that probabilistic hazard curves are generally needed to conduct probabilistic safety assessments for external events.	The sentence, as originally written was only a note and was not written as guidance. If the expectation is to turn this sentence into a SHALL statement, it needs to be completely rewritten into something like: “probabilistic hazard curves, where available, shall be used to conduct probabilistic safety assessments for external events”	Accepted		
<i>Lessons learned</i> 8.1	2.5 Proposed sites for nuclear installations shall be examined with regard to the frequency and severity of external natural and human induced events and phenomena that could affect the safety of the installation.	2.5 Proposed sites for nuclear installations shall be examined evaluated with regard to the frequency and severity of external natural and human induced events and credible combinations of these events phenomena that could affect the safety of the installation. New paragraph after 5.1: 5.1a Site specific design and safety assessment parameters shall be periodically evaluated based on lessons learned, the updated information, knowledge and methodologies, and their safety implications shall be evaluated.	2.5 Proposed sites for nuclear installations shall be evaluated with regard to the frequency and severity of external natural and human induced events and credible potential combinations of these events that could affect the safety of the installation. New paragraph after 5.1 5.1.a. Site specific hazards design and safety assessment parameters shall be periodically evaluated based on lessons learned, the updated information, knowledge and methodologies, and their safety implications be evaluated, reviewed at a frequency of not more than ten years interval and re-evaluated if needed. A shorter interval may be required in case of evidence of potential, significant hazard change (feedback of experience from the nuclear community, major plant accident, occurrence of extreme events, etc.). The safety implications on plant safe operation shall be evaluated.		
Japan 2	2.1.(a) The effects of external events occurring in the region of the particular site (these events could be of natural origin or human induced); 2.5. Proposed sites for nuclear installations shall be evaluated with regard to the frequency and severity of external natural and human induced events and ...	Clarification for terminologies. Wording of “external events” in Sec.2.1.(a) and “external natural and human induced events” in Sec.2.1 and Sec.2.5.		Accepted with modification	

WNA 1	5.1a 5.1a Site specific design and safety assessment parameters shall be periodically evaluated reviewed based on lessons learned, the updated information, knowledge and methodologies, and their safety implications shall be evaluated.	For clarification: a review of safety assessment parameters is needed for making an evaluation of its safety implications	Accepted		
Germany NS-R-3 5	5.1a Site specific design and safety assessment parameters shall be periodically evaluated based on lessons learned, the updated information, knowledge and methodologies, and their safety implications shall be evaluated.	Editorial. To improve the comprehensibility of the statement, we recommend to split it into two sentences.		Accepted with modification	
Pakistan 1	5.1a All hazards (natural or manmade) shall be re-evaluated and re-assessed periodically at a frequency of <i>not more than ten years</i> interval or a shorter interval if considered necessary. The re-evaluation and re-assessment shall be based on state-of-the-art knowledge, methodology and proven practices. A detailed report of the re-evaluation and reassessment shall be submitted to the regulatory body for review. If results of re-evaluation / reassessment indicate any increase in the potential hazard level previously considered in the design, appropriate measures shall be taken to justify further safe operation of the installation.	More comprehensive Since re-evaluation and re-assessment of site characteristics on periodic basis is highlighted as an important action. From seismic point of view this re-assessment will be helpful in order to assess the blind fault/incapable faults which may become capable with the passage of time. Similarly, flood pattern and level may also be affected as a result of environmental changes, changes in topography as a result of seismic events, as well as changes due to man-made structures. Therefore, there is a need for periodic re-assessment.	Accepted with minor changes, as too detailed for a requirement statement.		
ENISS EON	5.1a Site specific design and safety assessment parameters shall be periodically evaluated reviewed based on lessons learned, the updated information, knowledge and methodologies, and their safety implications shall be evaluated.	For clarification: a review of safety assessment parameters is needed for making an evaluation of its safety implications.	Accepted		
<i>Lessons learned</i> 8.1	3.55. If the hazards for the nuclear installation are unacceptable and no practicable solution is available, the site shall be deemed unsuitable.	Modify paragraph 3.55: 3.55. If the hazards for the nuclear installation are unacceptable or no practicable solution is available <u>for protection of the nuclear installation with sufficient margins</u> , the site shall be deemed unsuitable <u>or no longer suitable</u> .	Don't modify paragraph 3.55 2		
Germany NS-R-3 4	3.55 If the hazards for the nuclear installation are unacceptable and no practicable solution is available for protection of the nuclear installation with sufficient safety margins , the site shall be deemed unsuitable or no longer suitable.	It is not possible to define which amount and type of margin is "sufficient".		Original text kept	
UK 3	3.55 If the hazards for the nuclear installation are unacceptable or and no practicable solution is available for protection of the nuclear installation with sufficient margins, the site shall be deemed unsuitable or no longer suitable.	Within the aggregated comments document the word "and" is replaced with "or", this is not done in the marked up full text document, this changes the intent of the paragraph and is not supported With an "or" the para implies that if the hazards are unacceptable <u>but a practicable solution is available</u> the site shall be deemed unsuitable. This change is not supported.		Original text kept	
Ukraine	3.55 If the hazards for the nuclear installation are unacceptable or no practicable solution is available to ensure safety of nuclear installation for protection of the nuclear installation with sufficient margins , the site shall be deemed unsuitable or no longer suitable.	Previous version of paragraph was correct and compact, modification does not improve it, just adds some unnecessary words		Original text kept	
<i>Lessons</i>	2.2. If the site evaluation for the three aspects cited indicates that	2.2. If the site evaluation for the three aspects cited indicates that the site is	2.2. If the initial site evaluation <u>or subsequent reviews</u> for the three aspects		

² Text in the revised version of NS-R-3 (DS484) will be modified, as in general there are no "absolute" exclusion criteria based on the hazard characteristics. Moreover, margins should be referred to the installation design and not to design of site protection measures.

<i>learned</i> 8.1	the site is unacceptable and the deficiencies cannot be compensated for by means of design features, measures for site protection or administrative procedures, the site shall be deemed unsuitable.	unacceptable and the deficiencies cannot be compensated for by means of design features, measures for site protection or administrative procedures, the site shall be deemed unsuitable <u>or no longer suitable</u> . This applies also to 2.25, 2.28, 3.36, 3.40, 3.47, 3.50 and 3.51	cited indicates that the site is unacceptable and the deficiencies cannot be compensated for by means of design features, measures for site protection or administrative procedures, the site shall be deemed unsuitable. No need therefore to make changes in 2.25, 2.28, 3.36, 3.40, 3.47, 3.50 and 3.51 3		
Canada 1	2.2 If the site evaluation for the three aspects cited indicates that the site is unacceptable and the deficiencies cannot be compensated for by means of design features, measures for site protection or administrative procedures, the site shall be deemed unsuitable or no longer suitable . also applies to 2.25, 2.28, 3.36, 3.40, 3.50, 3.51, 3.55	Added text does not add clarity to the paragraph. Existing text is quite clear that “unsuitable” means the same thing as “no longer suitable” for existing sites. If, however, IAEA chooses to keep this revision in place, Canada does not oppose it.	Accepted		
USA (RES) 1	2.2, 2.28, 2.25, 3.36, 3.40, 3.50, 3.51, 3.55 Delete the phrase, “or no longer suitable.”	Technically, at least in the U.S. system, once the site is approved, there is no process to make the site where there are existing facilities unsuitable (except for adding more facilities). If new siting-related information is found, the NRC would stop further operation because the design is inadequate, not because the site is unsuitable.	Accepted		
<i>Lessons learned</i> 10.1		New paragraphs after 2.13 2.13a. For nuclear power plants, the total nuclear capacity to be installed on the site shall be determined as far as possible at the first stages of the siting process. If the installed nuclear capacity is significantly increased to a level greater than that previously determined to be acceptable, the suitability of the site shall be re-evaluated, as appropriate. 2.13b For assessing the feasibility of the implementation of the emergency plans, all nuclear installations to be installed on the site shall be considered.	New paragraphs after 2.13 2.13a. For nuclear power plants, the total nuclear capacity to be installed on the site shall be determined as far as possible at the first stages of the siting process. If the it is proposed that the installed nuclear capacity beis significantly increased to a level greater than that previously determined to be acceptable, the suitability of the site shall be re-evaluated, as appropriate. <u>New paragraph after 2.13</u> 2.13 ab For assessing <u>Assessment of</u> the feasibility of the implementation of the emergency plans, <u>shall consider all on-site (or co-located) nuclear installations, to be installed on the site shall be considered, with special emphasis to the nuclear installations that may experience contemporaneous accidents.</u>		
Germany NS-R-3 3	2.13 a should replace 2013 and 2.13b should become 2.13a	2.13 in the current NS-R-3 is redundant to 2.13a proposed here.	Accepted		
Japan 3	2.13 a should replace 2013 and 2.13b should become 2.13a	Editorial	Accepted		
Russia 9	2.13 a should replace 2013 and 2.13b should	The text of this paragraph completely repeats text of 2.13. We propose to	Accepted		

3 Text in the revised version of NS-R-3 will be modified, as in general there are no “absolute” exclusion criteria based on the hazard characteristics.

	become 2.13a	exclude repetition			
Pakistan 2	2.13b may be deleted	It is not part of site evaluation, it is part of GSR Part 7, so may be removed from here.			Rejected: it is a requirement
UK 4	2.13b For assessing the feasibility of the implementation of the emergency plans, all nuclear installations to be installed on the site shall be considered.	Conventional plant items might play a significant role in an emergency plan. Second change is to avoid an unnecessary repetition	Accepted		
USA 1 (NRR)	2.13b For assessing Assessment of the feasibility of the implementation of the emergency plans shall consider all onsite (or collocated) nuclear installations on the site shall be considered.	The original sentence is shortened to add clarity to the requirement.	Accepted		
Ukraine 3	2.13 a For nuclear power plants, the total maximum nuclear capacity to be installed on the site shall be determined ... 2.13b While assessing the feasibility of the implementation of the emergency plans, all nuclear installations on the site shall be considered	Editorial		The maximum is not know in advance, but the second part explain what to do if the capacity increases	
<i>Lessons learned</i> 10.1	3.51. The region shall be investigated for installations (including installations within the site boundary) in which flammable, explosive, asphyxiant, toxic, corrosive or radioactive materials are stored, processed, transported and otherwise dealt with that, if released under normal or accident conditions, could jeopardize the safety of the installation. This investigation shall also include installations that may give rise to missiles of any type that could affect the safety of the nuclear installation. The potential effects of electromagnetic interference, eddy currents in the ground and the clogging of air or water inlets by debris shall also be evaluated. If the effects of such phenomena and occurrences would produce an unacceptable hazard and if no practicable solution is available, the site shall be deemed unsuitable.	Modify existing para 3.51 3.51. The region shall be investigated for installations (including installations within the site boundary, <u>including collocated NPP units</u>) in which flammable, explosive, asphyxiant, toxic, corrosive or radioactive materials are stored, processed, transported and otherwise dealt with that, if released under normal or accident conditions, could jeopardize the safety of the installation. This investigation shall also include installations that may give rise to missiles of any type that could affect the safety of the nuclear installation. The potential effects of electromagnetic interference, eddy currents in the ground and the clogging of air or water inlets by debris shall also be evaluated. If the effects of such phenomena and occurrences would produce an unacceptable hazard and if no practicable solution is available, the site shall be deemed unsuitable <u>or no longer suitable</u> .	Modify existing para 3.51 3.51. The region shall be investigated for installations (including installations within the site boundary <u>and, including co-located</u> NPP units) in which flammable, explosive, asphyxiant, toxic, corrosive or radioactive materials are stored, processed, transported and otherwise dealt with that, if released under normal or accident conditions, could jeopardize the safety of the installation. This investigation shall also include installations that may give rise to missiles of any type that could affect the safety of the nuclear installation. The potential effects of electromagnetic interference, eddy currents in the ground and the clogging of air or water inlets by debris shall also be evaluated. If the effects of such phenomena and occurrences would produce an unacceptable hazard and if no practicable solution is available, the site shall be deemed unsuitable <u>or no longer suitable</u> .		
Pakistan 3	3.51 ... installations (including installations within the site boundary, including collocated NPP units) in which flammable, explosive, asphyxiant, toxic, corrosive or radioactive materials are stored, processed, transported and otherwise dealt with that, if released ...	It is already covered in nuclear installations within the site boundary			The text is kept, being a stress on an important concept
<i>Lessons</i>	2.7. The hazards associated with external events that are to be	Modify existing paragraph 2.7:		Modify existing paragraph 2.7:	

<p>learned 10.1 & 11.1</p>	<p>considered in the design of the nuclear installation shall be determined. For an external event (or a combination of events) the parameters and the values of those parameters that are used to characterize the hazards should be chosen so that they can be used easily in the design of the installation.</p> <p>3.21. The hazards for the site due to flooding shall be derived from the model.</p>	<p>2.7. The hazards associated with external events that are to be considered in the design of the nuclear installation <u>and for its safety assessment</u> shall be determined. For an external event (or a combination of events) the parameters and the values of those parameters that are used to characterize the hazards shall be chosen so that they can be used easily in the design of the installation <u>and for its safety assessment</u>.</p> <p>Modify existing paragraph 3.21:</p> <p>3.21. The hazards for the site due to flooding shall be derived from the<u>suitable</u> models.</p>	<p>2.7. The hazards associated with external events that are to be considered in the design of the nuclear installation and for its safety assessment shall be determined. For an external event (or a combination of events) the parameters and the values of those parameters that are used to characterize the hazards shall be chosen so that they can be used easily in the design of the installation and for its safety assessment.</p> <p>Modify existing paragraph 3.21:</p> <p>3.21. The hazards for the site due to flooding shall be derived from <u>by means of the suitable appropriate</u> models.</p>		
<p>Ukraine 3</p>	<p>3.21 The hazards for the site due to flooding shall be derived from credible<u>suitable</u> models</p>	<p>Editorial</p>	<p>accepted</p>		
<p>Lessons learned 12.1</p>		<p>New paragraph after 2.5.</p> <p>2.5a From the characterization of the hazards resulting from external events:</p> <ul style="list-style-type: none"> - The frequency and the severity information shall be used in establishing the design basis hazard level for the nuclear installation; - Account shall be taken of uncertainties in the design basis hazard level. 	<p>New paragraph after 2.5.</p> <p>2.5a From the characterization of the hazards resulting from external events:</p> <ul style="list-style-type: none"> - The frequency and the severity shall be used in establishing the design basis hazard level for the nuclear installation; - Account shall be taken of uncertainties in the design basis hazard level. <p>4</p>		
<p>Belgium 1</p>	<p>2.5a From the characterization of the hazards resulting from external events:</p> <ul style="list-style-type: none"> - The historical data and frequency information (if possible to quantify the frequencies with an acceptable degree of certainty) and the severity information shall be used in establishing the design basis hazard level for the nuclear installation; - Account shall be taken of uncertainties in the design basis hazard level. 	<p>For natural hazards, historical data should be taken into account. For some natural hazards, reliable frequency information is difficult to obtain. In such cases, in order to obtain a justified level of safety, design basis hazards should be characterized on the basis of other information</p>			<p>Rejected (too detailed)</p>

⁴Note: The revised version of NS-R-3 (DS484) provides much more detailed insights. It is recommended to refer to the new text