

*Safety Aspects in Siting for Nuclear Installations(DS433)*

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Adrian Freer		Page 1 of 1					
Country/Organization: ONR, UK		Date: 16 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	4.1, 2 <sup>nd</sup> bullet, 4.8 and 4.9	Delete all	See below			x	Nuclear security is related to Nuclear Safety (it challenging nuclear safety). Nuclear Security should be considered during site selection phase. The text was modified to reflect siting specific aspects and to reference nuclear security publications
2	4.10	Delete all reference to “protection against malevolent acts”.	See below	x			

**Reason:** Adding any criteria relating to malicious acts is outside the scope of the title of this Safety Standard. Indeed, any references to nuclear security in a Safety Standards should be confined to the interface between safety and nuclear security to ensure one does not compromise the other. It is difficult to envisage any potential negative impact nuclear security siting (as opposed to design) criteria would have on safety. However, no specific IAEA nuclear security guidance on this topic has yet been developed beyond the brief reference in paragraph 3.28 of NSS No.13. It is therefore unclear whether there would be broad MS consensus among the nuclear security community with the criteria listed here or whether there would be additional criteria. Furthermore, it is doubtful whether States would consider some or all of this criteria to be discretionary (particularly in the event of it being proposed to site a nuclear facility in an area with a high terrorist threat). We would welcome discussion on this topic at the next NSGC.

*French comments on documents posted for the 3<sup>rd</sup> NSGC meeting*

**Reviewer Country /Organization:** FRANCE / MEDDE

**Date:** 2013-04-17

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**III - Comments on Safety drafts/DPPs (interface documents) for NSGC clearance**

**Safety documents**

- General comments :

Integration of security aspects in safety documents and vice versa should follow the agreed proposal made during second meeting of NSGC. It should consist in including brief references to where interfaces may exist and provide cross-references in the appropriate serie.

This will prevent making incomplete or inappropriate recommendations.

- Detailed comments are presented in the following resolution tables

COMMENTS BY REVIEWER		RESOLUTION					
Reviewer: FRANCE/MEDDE 2013-04-17		DS433 Draft Safety Guide Step 11 Siting Nuclear Installations					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	4.8	Paragraph with :  4.8 – Other criteria related to protection against malicious acts should be taken into account when siting of a nuclear installation.	This subject would require to be addressed thoroughly in the nuclear security series and not in this safety document.		x		Protection against malicious acts was replaced by Nuclear Security aspects – to be considered during site selection.  Reference to Nuclear Security Guides is added.

### DS433 draft 16: Safety Aspects in Siting for Nuclear Installations

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: M. de Vos & D. Miller Page.... of.... Country/Organization: Canada, Canadian Nuclear Safety Commission, with input from industry Date:							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	Footnote 1	<p>“The new definition of “nuclear installation’ includes: nuclear power plants(<i>of all sizes</i>); research reactors (including subcritical and critical assemblies) and...”</p>	<p>Minor clarification.</p> <p>As currently written, where SMRs fit in this document is not clear.</p> <p>There does not appear to be an IAEA definition of NPP in the 2007 IAEA glossary to clarify whether so-called SMRs are included in the IAEA’s meaning of the term “NPP”. The proposed text clarifies this. Existing conceptual SMRs designs can be as small as 5 MWe and can be used for process steam etc rather than for electrical generation.</p>			x	<p>It is according with the New revision of Glossary . I cannot change this definition in the context of DS433. This has to be proposed for the revision of the Glossary.</p>

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Reviewer: M. de Vos & D. Miller Page.... of.... Country/Organization: Canada, Canadian Nuclear Safety Commission, with input from industry Date:							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
2	Section 1	A new paragraph should be added to Section 1 (perhaps after 1.10) along the following lines: <i>1.10b? The future operator of the proposed facility on the site should have an early role to play in reviewing and accepting work done during siting, even if the future operator does not have a direct role in selecting the site. The bases for selecting the site, such as site characterization data, will play a role in the development of the facility's licensing basis for the life of the facility. The future operator needs to be confident that the information they are accepting is of high quality.</i>	The document, as written, does not clearly identify that the future operator of the facility on the site should have an early role to play in reviewing and accepting work done during siting.		x		Accepted with some modifications. Siting does not include site characterization (Glossary 2007 for Nuclear Installations)
3	1.1, last sentence	Suggest to add "This guide deals with the population density ... implementing emergency measures, <i>over the life of the installation.</i> "	The introductory paragraph is excellent. Although the document does imply the need to look forward over the life of the facility, there is a need to further stress this	x			

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Reviewer: M. de Vos & D. Miller Page.... of.... Country/Organization: Canada, Canadian Nuclear Safety Commission, with input from industry Date:							
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			important point in a few key locations such as in the area of population density & distribution and land use.				
4	1.2, last sentence	Suggest to add “....and (c) the population density and ..... and the population, <i>over the life of the installation</i> ”	Same comment as in Comment 3. It should be forward looking in view of population density & distribution and land use.	x			
5	1.11	<i>The site should be deemed to be unsuitable for the purposes of licensing the proposed facility if it is concluded during detailed assessment (evaluation) of external hazards that no engineering solutions exist to design protective measures against those hazards that challenge the safety of the nuclear installation, or there are no adequate measures to protect the peoples against unacceptable radiological risk.</i>	Paragraph re-worded to make the paragraph easier to read.	x			

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Reviewer: M. de Vos & D. Miller Page.... of.... Country/Organization: Canada, Canadian Nuclear Safety Commission, with input from industry Date:							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
6	2.5	After the site selection stage, the confirmation of site suitability and a complete site characterization are performed along with <i>finalizing the</i> derivation of the design bases due to external events during the site assessment stage.	The design basis is in the process of being derived during the siting stage. The design basis needs to be finalized during the site evaluation stage , as this is an important input into design.	x			
7	2.5, top of p. 7	<p>“This includes all confirmatory, monitoring and re-evaluation work throughout operational stage and, especially, during periodic safety reviews of the installation.” <del>This portion of work is generally reported in Periodic Safety Review (PSR) reports.</del> “</p>	<p>Regarding:</p> <p>“This includes all confirmatory, monitoring and re-evaluation work throughout operational stage and, especially, during periodic safety reviews of the installation. This portion of work is generally reported in Periodic Safety Review (PSR) reports. “</p> <p>Because not all countries carry out PSRs, it is suggested that the</p>			x	PSR is strongly recommended by IAEA Safety Standards – and will be stressed in the addenda of NSR-3 (revision by the Fukushima Task Force)

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			document states that the site evaluation is periodically reviewed.				
8	2.6	<i>In most member states</i> , siting is a de-regulated activity and no license is required. <i>Siting and</i> the site evaluation processes should be <i>consistent</i> with the licensing process defined by the Regulatory Body and <del>be consistent with applicable IAEA Safety Standards on this topic</del> [9, 10].	Flexibility is needed here – different jurisdictions/ countries may have different rules regarding siting and site evaluation.  The use of the term “Comply” is too strong and implies a compliance program may be needed.	x			
9	3.1	...and Human induced hazards so that an adequate level of safety can be <del>reasonably</del> achieved.  Further, the surrounding demographic setting and dispersion characteristics should likely allow the implementation of mitigation measures in the case of an accidental release of radionuclides, <i>over the life of the installation</i>	The word ‘reasonably’ should be deleted because it appears to over-soften the statement which aims to ensure an adequate level of safety can be achieved.  It should be forward looking in view of	x			



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			population density & distribution and land use.				
10	3.5	The final selection is generally done by the <i>government or operating organization (future licensee)</i> for the nuclear installation taking input from all the relevant stakeholders. <i>The operating organization/future licensee should be involved from the outset of the siting process.</i>	<p>The term “operating organization” (future licensee) was used in para 1.10 – so just need to be consistent throughout the document</p> <p>It should be emphasized further here that the operating organization/ future licensee should be involved from the outset of the siting process.</p>	x			
11	3.16	“.... Data collection related to .... the Exclusion criteria. <i>Note that this is dependent on the technologies being considered for the site.</i> ”	This could be difficult to do and may get quite complicated, as one should have specific technologies under consideration when doing this work. Some technologies may be better suited to			x	Exclusion criteria as defined in the requirements NS-R-3 are technology independent.

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			accommodate site-related challenges more than others.				
12	3.17 (a), (b)	<p>(a) <i>For operational states of the installation, the radiological exposure of the population remains as low as reasonably achievable over the life of the installation, and in any case is in compliance with national requirements, with account taken of international recommendations.</i></p> <p>(b) <i>The radiological risk to the population associated with accident conditions, including those that could lead to emergency measures being taken, is acceptably low, over the life of the installation.</i></p>	It should be forward looking in view of population density & distribution and land use.			x	3.17 – is a citation from NS-R-3 document and cannot be changed.
13	3.22	The siting process, as discussed above, is for construction <i>and operation</i> of a new nuclear installation...”	A safety case for operation of the installation is the ultimate goal of the siting process.	x			
14	3.23	Change “were” to “where” for both bullets	editorial		x		Addressed by other comments

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15	3.23		please clarify what “completion of data” means				Up-date the old data by new investigations to comply with the updated requirements and standards.
16a	3.24	“The impact of a new installation <i>on</i> an existing site...”	editorial – change “in” to “on”	x			
16 b	3.24	<i>“In certain cases, due to age, technology, design, etc., plants on the same site could have different licensing requirements”</i>	It may be worthwhile to consider adding language that states that, in certain cases, plants on the same site could have different licensing requirements.	x			
17	4.6	<i>These criteria should be assessed for the anticipated life of the installation</i>	Add text after item (g)			x	This issue is addressed during operation phase through PSR.
18	5.1	Site selection should rely upon an increasingly detailed process of data collection <i>and evaluation</i> .	Add suggested text, for clarity	x			
19	5.4	The analyses performed based on the collected data should consider the	This text needs to be mentioned earlier in the	x			

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		total operating lifetime of the nuclear installation.	document – perhaps in Section 2, as it is very important to emphasize this.				
20	7.1	As a function of the management system, the quality assurance program should be established by the <i>operating organization (future licensee), and the contractors that carry out site investigation work for the investigation and selection of the site of a nuclear installation.</i>	Text needs some clarification as it is always the licensee (operating organization) that has ultimate responsibility for site data, and its use in the design, construction and operation of the installation. At a minimum, the future operating organization should play a lead role in acceptance of the quality assurance program used.		x		Siting includes only site survey and site selection.
21	7.7	When developing the part of the management system dealing with the siting process, the following should be <i>considered</i> :	Editorial – need to complete the sentence	x			
22	Appendix A, item 12	<i>In particular</i> , the area near the proposed site (e.g. 8 km) should be	editorial	x			

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		investigated precisely and in detail.					
23	Appendix A, Item 35	To determine the potential of human induced events that could affect the site, it is necessary to collect information about the human activities around the site <i>and analyze how these activities may change over the life of the facility.</i>	The sentence needs to be reinforced to be forward looking in view of population density & distribution and land use. As currently written, it appears to imply that only a current ‘snapshot’ of the categories is needed.	x			
24	Appendix A, Item 37	In this stage, it will be necessary to provide more detailed estimates of the severity/frequency of human induced events affecting the site <i>or that may affect the site in the future.</i>  <del>Such analyses should be undertaken</del>	The sentence needs to be reinforced to be forward looking in view of population density & distribution and land use. As currently written, it appears to imply that only a current ‘snapshot’ is needed.  Second last sentence	x			

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		<del>at this stage by a competent person or organization.</del>	should be deleted because ALL siting activities should be done by competent persons or organizations, so why is the statement particularly important here?				
25	Appendix A, 38	38. The criteria relate to the potential radiological and other impacts of the nuclear installation on the workers, population and the environment due to normal operation and accident conditions. Furthermore, the feasibility of the implementation of emergency plans, <i>over the life of the installation</i> , is also addressed through this database.	It should be forward looking in view of population density & distribution and land use.	x			
26	Appendix A, 38	39. One of the most common metrics considered at this stage is related to either population density in the site vicinity or distance of the potential or candidate sites to population centres (or both). This type of a metric is easy to use because, most of the time, such data is readily available. Care should	It should be forward looking in view of population density & distribution and land use.	x			

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		<p>be taken to use reasonable numbers for screening values. It should also be noted that these values are country dependent.</p> <p><i>It is important however, to also consider population density projections for the life of the installation in the assessment of site suitability.</i></p>					

### Member State Comments on IAEA Draft Safety Guide “Safety Aspects in Siting for Nuclear Installations” (DS433)

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: United States of America Country/Organization: U.S. Nuclear Regulatory Commission				Date: April 19, 2013			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	General	Re-number pages continuously	Numbers start from 1 more than once.	x			
2	Figure 1 (Page 6)	Retain five distinct stages in the descriptive text to correspond to the figure.	All later chapters retain this distinction and address data needs of these two stages of the siting process separately.	x			
3	Figure 2 (Page 7)	Present Figure 2 below Figure 1.	The two figures are closely related. Presenting them one below the other would help the user to understand the products of each stage in the siting process.			x	There is different explanatory text for Figures 1 and 2.
4	1.4/P.9	Define “external hazards”	It is not clear what "external hazards are dominant" means. Are they natural, manmade or all together?	x			External hazards was replaced with external event defined in NS-R-3)
5	2.7(b)/P.14	Define “site related design basis parameters”	It is not clear what is "site related design basis parameters"?				Are those site specific parameters that have to be considered in the design: meteorological, geotechnical, seismic ground motion, etc.
6	Figure 3/P.16	General comment	NRC is not reviewing those stages of site selection. NRC reviews the site which is already selected by			x	There is nothing saying that the regulator should review the siting process. It was stated at



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Reviewer: United States of America Country/Organization: U.S. Nuclear Regulatory Commission				Date: April 19, 2013			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			utility/applicant. Same probably applies to other countries' regulatory agencies.				the beginning that siting is a deregulated activity and therefore this SGs is mainly for the organization who will do site survey and site selection.
7	3.17(b).3 / P.19	Define "capable fault as an active fault that can produce earthquake"	Define capable fault and state how far it can be from the site. It is defined later on P. 23. Should be defined when used first.				As defined in IAEA NS-R-3 and SSG-9.
8	3.21 / P. 20	Define "reference site"	Not clear what reference site means. Is it a site which is suitable for nuclear installation?	x			I agree – it was confusing. Reference site was deleted.
9	Section 3.23 (Page 6)	Fix the language.	The two bullets start rather awkwardly.	x			
10	Item(e) of Section 3.24	"common cause <u>failures</u> "	This is preferable to "common cause faults."	x			
11	5.8 (g)/ P.27	Coastal flooding database <u>including tsunamis</u>	Add "including tsunamis"	x			
12	Section 6.1 [(Page 14, item(d))]	Delete the ("") after facilities and replace with a period.	typo	x			
13	6.1	Add a new bullet / letter to state:	Medical isotope production facilities that use uranium			x	included in the new definition of nuclear

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Reviewer: United States of America Country/Organization: U.S. Nuclear Regulatory Commission				Date: April 19, 2013			
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		(e) Medical isotope production facilities that utilize nuclear materials.	targets should also be listed in a newly added Subsection 6.1(e). As the targets are processed to extract the isotopes of interest, much of the uranium materials remain in a form that is no longer usable as a target. Since those resulting waste materials can be hazardous if not properly controlled, such facilities should be specifically listed. Additionally, isotope production facilities may or may not involve a reactor. Even if a reactor is used, the facility that extracts the isotope may not be co-located at the reactor site.				installations
14	Section 6.3 [(page 15), item (h)]	Superscript 6 after effect	Formatting	x			
15	6.3	Update section 6.3 to state:  Prior to categorizing an installation if adopting a graded approach, a conservative process should be applied	As originally written, Section 6.3 directs the reader to "estimate the consequences of a radiological release in which it is assumed that the	x			

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Reviewer: United States of America Country/Organization: U.S. Nuclear Regulatory Commission				Date: April 19, 2013			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		<p>to estimate the consequences of a radiological release <b>associated with a maximum hypothetical event (accident)</b> in which it is assumed that <del>the entire radioactive inventory of</del> <b>incredible failure occur resulting in radiological release from the installation is released by an accident</b>. The analysis should use the worst case radioactive inventory expected during the life of the installation and should not include any mitigating factors associated with siting (e.g., atmospheric dispersion), unless those factors are included in the final site selection acceptance criteria.</p>	<p>entire radioactive inventory of the installation is released." This is <u>excessively conservative</u> and, upon analysis, one will find that under these assumptions, research reactors siting, even of low thermal power, would require extremely remote locations, if they could be licensed at all. I am not sure how this can be of any use to the siting of the installation.</p> <p>The U.S. NRC considers a Maximum Hypothetical Accident (MHA) in the licensing of research reactors. The consideration of a MHA is a conservative process that estimates the consequences of a radiological release. The MHA assumes an incredible failure that leads to a release, typically due to a significant failure of fuel</p>				

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			cladding or a fueled experiment. The dose to workers and to the public attributable to the MHA is compared to regulatory dose limits. The result is that MHA analysis bounds all credible accidents and is used in part to make a licensing decision (including the siting) for a research or test reactor.				
16	6.4(a), lines 1 & 2	Update letter/bullet to state: 6.4 ..... (a) The amount, type, <b>form (e.g. solid, liquid, or gas)</b> and the status of the <b>radioactive</b> inventory at the site (e.g. whether <b>solid or fluid</b> , processed or only stored);	I would recommend the inclusion of "form" in the statement. As originally written the material form was to be captured under the "status of the inventory" as indicated by the parenthetical wording that followed. The attribute of the material form is important enough to facility siting and design that should be specifically listed.		x		
17	6.4(b), line 2	Update letter/bullet to state: 6.4 ..... (b) The intrinsic hazard associated with the physical processes (e.g. nuclear	See "Reason" for comment on 6.1			x	medical isotope are included in the new definition of nuclear installations

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Reviewer: United States of America Country/Organization: U.S. Nuclear Regulatory Commission				Date: April 19, 2013			
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		chain reactions) and chemical processes (e.g. for <b>medical isotope and</b> fuel processing purposes) that take place at the installation;					
18	6.4(e), line 1	Update letter/bullet to state: 6.4 ..... (e) The concentration of radioactive <b>sources materials</b> in the installation (e.g. for research reactors, most of the radioactive inventory will be in the reactor core and the fuel storage pool, whereas in fuel processing and storage facilities it may be distributed throughout the installation);	The deletion of "sources" and the addition of "materials" make the statement more consistent with the parenthetical example that follows.	x			
19	6.4(h), Note 6		Review definition of cliff edge effects in Note 6 to ensure consistency with other uses in IAEA documents, particularly in light of efforts to incorporate Fukushima lessons learned.	x			As per IAEA Glossary 2007.
20	Section 6.7 [(page 16), items (a), (b) and (c)]	Do they belong here?	They seem to be design issues rather than siting issues.		x		This is the basis for defining a grading approach and may influence siting process (eg. for a small power research reactor less stringent criteria can be used justified by grading

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							approach).
21	6.7(b), line 1 & 2	Update letter/bullet to state: 6.7 ..... (b) The highest hazard category includes installations for which standards and codes <b>that establish an equivalent level of quality to those used</b> for nuclear power plants should be applied.	Not all codes and standards applicable to NPPs would apply to non-NPP facilities. The intent of the statement was to make clear the need for a level of quality that approaches or is equivalent to that of a NPP. This may require using standards and codes that have no applicability to NPPs.	x			
22	7./P.38	Define "very low probability" or explain what it can mean.	Not clear what "very low probability" means. Should be more specific, like for example, 10-4.				IAEA SGs cannot use specific numerical targets – will never get consensus of MSs so we should use such words. (We can changed to sufficiently low probability)
23	Seismologic-al database, item 8, (P. 23), volcanologic-al database, item 14	Provide consistency among screening criteria.	Screening criteria for natural hazards (seismological, volcanological and flooding) are inconsistent. For example, under seismological database, item 8 seems to suggest that even preliminary			x	This section describes the database and information to be collected. Does not describe the screening. Estimated seismicity There is nothing that says that known currently active

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	(P.24) and flooding database, (P. 26)		information on an active seismic zone could be used as a screening criterion, while under volcanological database, item 14 seems to suggest that even a known currently active volcano may not be used as a screening criterion.				volcanos may not be used for screening (depends of the distance to the site also).
24	9./P.38	Use of paleoseismological data is highly recommended if available.	Those data are useful for recurrence rate calculations.	x			
25	Annex I, Table I-2 (Page 34)	Include "liquefaction" under geotechnical issues.	Liquefaction is as important as the slope stability issue.	x			
26	Annex II, [Section II.5, item vii, (Page 38)]	Change the subtitle from "Geological Hazards" to "Geological and Geotechnical hazards."	Items a, b, c, f, and j are mainly geotechnical rather than simply geologic hazards.	x			

### Title: Comments on DS433Safety Aspects in Siting for Nuclear Installations

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:Ricardo WaldmanPage 1 of Country/Organization:Argentina/ARNDate:19 April. 2013				Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
Comment No.	Para/Line No.	Proposed new text	Reason				
1		General	The draft shows a broader scenario of the siting process and it will complement satisfactorily other Safety Guide dealing with such matter. It is advisable that the involved Committees (NUSSC, WASSC and NSGC) improve the revision process, additionally RASSC should revise at least topic ii) on page 7(?) (the numbering of the pages is not clear).				
2	Paragraph 1.12, third line	"the siting process, such as nuclear security aspects, technology,...".	NSGC is one of the involved Committees, the term 'nuclear' is missing	x			
3	Paragraph 1.14 on page 4, second line	"may not be very distinct and will depend on the methodology and <b>technology</b> used. There is...".	Also depends of the technology	x			
4	Paragraph 1.16 on the same page, last line	"nuclear installations but this approach could be no practical in some cases".	The title of the document is "... for Nuclear Installations"			x	This approach is not applying to nuclear facilities other than nuclear installations.
5	Footnote 1 on the same page	: It reads "The <b>new</b> definition...", The term new should be deleted	is it really new? Note that the IAEA Safety Glossary (Reference 14 on page 21) was issued on 2007.			x	Was decided by the CC to use the new definition already agreed



COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:Ricardo WaldmanPage 1 of Country/Organization:Argentina/ARNDate:19 April. 2013				Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
Comment No.	Para/Line No.	Proposed new text	Reason				
							for the new revision of the glossary.
6	Paragraph 1.18, fourth and fifth lines on page 5	"and quality assurance requirements" should be deleted.	it is a part of the management system	x			
7	Paragraph 2.4 on page 6, ninth line Paragraph 2.5 on page 7	the term "Final" should be deleted,	the Final Safety Report will be issued once the decommissioning stage is completed			x	It is consistent to IAEA SSG-12 Licensing Process for Nuclear Installations for protecting people and the environment.
8	Paragraph 2.6 on page 7	, at the end a new footnote should be added mentioning that in some Member States the licensing process does not include a license for the site, it is a part of the construction license, if issued.	Argentina is an example			x	Footnote was deleted – to address other MS comments. There is no indication that the site require a separate license.
9	Paragraph 2.7 on page 7	a link to3.1 it is advisable in item (c).	the meaning of "site protection" in item (c) can be inferred from first sentence of paragraph 3.1			x	Look pretty clear as is.

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:Ricardo WaldmanPage 1 of Country/Organization:Argentina/ARNDate:19 April. 2013							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
10	Paragraph 3.1 on page 8, line 1	"Siting is a process...".	Note that in 3.2 its first line reads "The siting process consists of...".	x			

**Draft Specific Safety Guide DS433 “Safety Aspects in Siting for Nuclear Installations”,  
Version 2013-03-18 (Draft 00.16)**

Note: [Blue parts](#) are those to be added in the text. ~~Red parts~~ are those to be deleted in the text.

Relevance	COMMENTS BY REVIEWER				RESOLUTION			
	Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
3	1	1.7	2 <sup>nd</sup> sentence: “The revision is necessary to bring the Safety Guide into consistency with the existing safety requirements in Refs [1] and [16], particularly as they relate to exclusionary criteria, and with other Safety Guides that provide recommendations relevant to the early stages of site evaluation, <a href="#">especially</a> Refs [3 to 8] <a href="#">and [15]</a> .”	Ref. [15] is not cited in the document. Our proposal for proper citation in Section 1 is provided here. The Actions 160 – 169 “Site survey and site evaluation” (Paras 3.24 – 3.48) set out in the IAEA Safety Guide SSG-16 overlap with DS433, especially with Section 2.	x			
2	2	after 1.8	Insert new Para 1.9 with the following text: “ <a href="#">Terms in this publication are to be understood as defined and explained in</a>	Ref. [14] is not cited in the document. Our proposal for proper citation in Section 1 is provided here. Wording	x			

			<a href="#">the IAEA Safety Glossary [14], unless otherwise stated.</a>	takes into account that the definition of the term ‘nuclear installation’ has recently been revised (see Footnote No. 1 to Para 1.16).				
2	3	1.11	1 <sup>st</sup> sentence: “ <del>During</del> <a href="#">If the</a> detailed assessment (evaluation) of external hazards <del>if it is concluded</del> <a href="#">reveals</a> that no engineering solutions exist to design protective measures against those hazards that challenge the safety of the nuclear installation, or there are no adequate measures <a href="#">available</a> to protect the people <del>s</del> <a href="#">and the environment</a> against unacceptable radiological risk, the site is not suitable and <a href="#">a nuclear installation at this site</a> is not licensable.”	Clarification, misleading wording.		x		Canada provided re-wording of this paragraph.
3	4	1.14	2 <sup>nd</sup> sentence: “...the selection of site(s) for one or more nuclear installation <del>s</del> <a href="#">(s)</a> .”	Grammar.				
3	5	1.15	“... this <del>s</del> <a href="#">S</a> afety Guide provides recommendations regarding ...”	In conjunction with the IAEA Safety Standards Series, ‘Safety Guide’ should be used as capitalized term consistently throughout the document.	x			
3	6	1.17	2 <sup>nd</sup> sentence: “The <del>guide lines</del> <a href="#">guidelines</a> for final site evaluation or re-evaluation ...”	Editorial.	x			
3	7	1.18	6 <sup>th</sup> sentence: “Section 7 provides recommendations <a href="#">on meeting the requirements</a> for management systems <del>and quality</del> ”	Wording. The term ‘management system’ reflects and includes the initial concept of	x			

			<del>assurance requirements.</del> ”	‘qualitycontrol’ and its evolution through ‘quality assurance’ and ‘quality management’, as stated in the IAEA Safety Requirements GS-R-3 (Para 1.4).				
3	8	1.18	last sentence: “...used in some <del>m</del> Members <del>S</del> States.”	In conjunction with the IAEA, ‘Member State(s)’ should be used as capitalized term consistently throughout the document.	x			
3	9	3.8	2 <sup>nd</sup> bullet point: “... These criteria, listed in Table I-1 of Annex <del>e</del> I, are used to ...”	Editorial.	x			
3	10	3.14	last sentence: “...are also used for <del>a</del> preliminary evaluation of sites in the site selection stage <del>of siting process.</del> ”	Wording. The last phrase is dispensable due to the information provided in Para 2.3.				
2	11	3.15	3 <sup>rd</sup> sentence: “...eventual elimination of all the candidate sites due to a common and regional shortcoming. <del>e.g. If</del> <u>For example, if</u> two candidate sites are geographically widely separated then the seismic hazard may be widely different at each site, <u>which reduces the risk of both being eliminated later in the siting process due to concerns over the seismic safety of proposed nuclear installations.</u> Siting process of ...”	An additional explanation is recommended to better understand the intention of the example provided in this para. Note: Herewith we support a proposal of UK ONR – see UK comment No. 37 to the previous draft revision 00.12 (submitted to Member States comments).	x			
2	12	3.23	“There are several issues which need special attention, when sites: • <del>were site was</del> <u>that have been</u> selected	Clarification, misleading wording. The statement in the previous draft revision	x			

			<p>in the context of an earlier nuclear installation project, are to be re-assessed to confirm up-to-date safety requirements;</p> <ul style="list-style-type: none"> <li>• <del>were site was</del> <u>that have been</u> discarded are re-considered for a new nuclear installation project.”</li> </ul>	00.12 (submitted to Member States comments), Para 3.25, was clear and should be retained.				
3	13	3.24 (f)	Numbering of items (ii), (iii) and (iv) should be changed to (i), (ii) and (iii).	Incorrect numbering. Item (i) subordinated to bullet point (f) is missing in this para.	x			
2	14	3.24 (f)	<p>Item (ii), 2<sup>nd</sup> bullet point:</p> <p><i>“Accident condition doses and risks: ... However, where the accident initiator is a common cause event (e.g. flood) then both risks and doses to members of the public should be assessed considering that all facilities at the site are simultaneously challenged <del>as outside the site may be higher for the combined site.</del> ...”</i></p>	Clarification, misleading wording.	x			
3	15	3.25	<p>1<sup>st</sup> sentence:</p> <p>“... expect the operators of the existing site to seek information ...”</p>	Missing letter.	x			
3	16	4.2	<p>1<sup>st</sup> sentence:</p> <p>“... and the associated <del>s</del> <u>Safety</u> <del>g</del> <u>Guides</u> related to the site evaluation ...”</p>	In conjunction with the IAEA Safety Standards Series, ‘Safety Guide’ should be used as capitalized term consistently throughout the document.	x			
3	17	4.4 (a)	<p>Consecutive numbering of all items subordinated to bullet point (a):</p> <p>“(i) Oil and Gas operations ... (ii) Military facilities ... <u>(iii)</u> Electromagnetic interference”</p>	Numbering of item (iii) is missing in the list of stationary sources.	x			

3	18	4.6 (d)	“Specific considerations prescribed by the Regulatory Body for <u>special</u> zones, such as the exclusion <del>ary</del> area boundary, low population zone, etc.”	Consistency with the terminology used elsewhere in the document (Appendix A, 41.; list of abbreviations).	x			
3	19	6.4	Para 6.4 should be placed on a new line.	Editorial.	x			
3	20	6.4 (h)	“... might show a cliff edge effect <sup>6</sup> in the event of an accident;”	Footnote No. 6 is incorrectly placed (superscript).	x			
2	21	6.6 (c)	“The characteristics specified in Para. <del>6.5</del> <u>6.4</u> .”	Wrong para is cited.	x			
2	22	6.9	1 <sup>st</sup> sentence: “Criteria not directly associated with safety (Paragraphs <del>4.11 and 4.12</del> <u>4.10</u> ) may be ...”	Wrong paras are cited. Para 4.10 deals with non-safety related criteria.	x			
2	23	Title of Section 7	“APPLICATION OF MANAGEMENT <u>SYSTEMS</u> ”	Missing word. Section 7 provides recommendations for the application of management systems.	x			
2	24	7.3	1 <sup>st</sup> sentence: “The management system <del>program</del> for the siting process is a part of the overall management system <del>program</del> for the nuclear installation project.”	Clarification, misleading wording.	x			
3	25	7.3	2 <sup>nd</sup> sentence: “... conduct of activities for site survey and <u>site</u> selection stages of the nuclear installation...”	Wording.	x			
2	26	7.16	1 <sup>st</sup> sentence: “Requirements for implementing a management system <del>program</del> should be established by the responsible organizations.”	Clarification, misleading wording.	x			
3	27	Appendix A, 3.	2 <sup>nd</sup> sentence: “... are specified in the relevant Safety	Missing letter.	x			

			Guides [5] and [8].”					
3	28	Annex II, II.1	3 <sup>rd</sup> sentence: “... information on the practices of different <del>m</del> Members <del>s</del> States and ...”	In conjunction with the IAEA, ‘Member State(s)’ should be used as capitalized term consistently throughout the document.	x			
3	29	Annex II, II.7	Point 5: “Management of radioactive waste during operational states”	Grammar.	x			
3	30	Annex II, II.8	Point 4: “...for special zones, if any, such as exclusionary <del>area</del> <del>zone</del> boundary, low population zone etc.”	Consistency with the terminology used elsewhere in the document (see Para 4.6 (d); Appendix A, 41.; list of abbreviations).	x			
3	31	List of Abbreviat ions	Delete the following abbreviations: ALARA; DBA; DBGM; EZ; MS.	All these abbreviations were used in the previous draft revision 00.12 (submitted to Member States comments), Annex II, Paras II.12 – II.25. These paras are removed from the text of the current draft revision.	x			
3	32	Page number- ing	General note: After page 8 of the document, the next page number starts with #1. It should be #9 and the numbering sequence should follow in a correct fashion.	Editorial.	x			

**DS 433 Safety Aspects in Siting for Nuclear Installations, Draft 00.16, 2013-03-18**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: M-L Järvinen		Page.... of....					
Country/Organization: STUK		Date:2013-4-22					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	General	The guide gives good guidance on the siting for nuclear installations.					
2	General, Title of the guide	Safety Aspects in Siting for Nuclear Installations and Final Disposal Repositories.	The new definition of the nuclear installations footnote 1 page 4 does not include the final disposal repositories. The siting of these activities is also important.			x	Final Disposal are not included in the scope of this guide
	General	Final Disposal Repositories should be added to the safety guide. the guide should be reviewed systematically in respect of this issue.				x	Final Disposal are not included in the scope of this guide
4	para. 1.16	1.16. This Safety Guide addresses a range of nuclear installations and final disposal repositories....	The scope of the guide should include also final disposal repositories.			x	Final Disposal are not included in the scope of this guide
5	para. 2.4	Site evaluation is the process that extends from (a) the last stage of the siting process (i.e. the phase of	add and repositories. See above.			x	Final Disposal are not included in the scope of this guide



		evaluation of the candidate sites in order to arrive at the preferred site (s)); to (b) the detailed assessment of the selected site to confirm its suitability, its characterization and derivation of the site related design bases for the installation or repositories; to					

**TITLE : DS 433 Safety Aspects in Siting for Nuclear Installations (draft 00.16 – 2013/03/18)**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:		F. Féron		Page			
Country/Organization:		France/ASN & IRSN		Date: 19 April 2013			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	General	Verify/adjust the use in the text and figures of defined terminology regarding “candidate site” / “selected site” / “potential site”... For example Figure 1 mention the “final site” which is address in §2.3 as the “preferred candidate site”, and in §2.4 as “preferred site”, and in figure 3 as either “preferred candidate site” and “selected site”...	Clarification		X Preferred site is preferred candidate site in section 2.4 .From the preferred candidate sites, a site is selected		
2.	1.4	...screening out sites where external hazards are <u>or could</u> <u>become</u> dominant and additional design safety measures would be excessively demanding for site utilization <u>or sites where knowledge is not sufficient to define these measures with a sufficient degree of confidence.</u>	Should be screened out : <ul style="list-style-type: none"> <li>• A site particularly sensitive to external hazards modification</li> <li>• A site with no sufficient knowledge to identify how dominant the external hazards are</li> </ul>	x			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron Country/Organization: France/ASN & IRSN		Page Date: 19 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
3.	1.12	This Safety Guide explicitly addresses the safety aspects of the siting process of nuclear installations. It is recognized that there are aspects that play an important role in the siting process, <u>possibly both on safety issues and non-safety issues</u> , such as security aspects, technology, economics, land use planning, cooling water availability, non- radiological environmental impact, and socio-economic aspects including public opinion	Aspects as cooling water availability, technology or security... could have an interaction between safety and non-safety issues.	x			
4.	1.16 footnote 1		The footnote provide a “new definition of nuclear installation” which shall be not specific to this guide. IAEA glossary shall be updated accordingly				This definition was suggested by CC and was approved for the new edition of Glossary.
5.	2.6	The siting is <u>generally</u> a de-regulated activity <u>and (i.e. no license is required).</u> Site evaluation processes <u>shall</u> comply with the licensing process defined by the Regulatory Body and be consistent with IAEA Safety Standards on this topic [9, 10].	To avoid preventing a regulator to regulate siting.  Compliance with licensing process is mandatory		X		Already addressed by other MS comment. We cannot use shall in a SG.
6.	2.7	“(c) The <u>review edition</u> of the PSAR or preliminary safety case”	For consistency of the list	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron Country/Organization: France/ASN & IRSN		Page Date: 19 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
7.	3.1	“...suitable locations for a the envisaged nuclear installation...Further, the surrounding demographic setting and dispersion characteristics should likely limit as low as reasonably achievable the radiological exposure of the population in any plant states, and allow the implementation of mitigation measures in the case of as accidental release of radionuclides.”	Editorial, Radiological impact in normal operation should be also consider, Editorial	X			
8.	3.3	“ ... (i) to evaluate the sites in order to assure there are no features (at the sites and in their surrounding area) that would preclude...”	“Features” are not necessarily at the site	X			
9.	Page 9	Check page numbering as page 1 (figure 3, para 3.5 and 3.6) should be page 9		X			
10.	3.7	Add an example to illustrate: “... <u>The important aspect of the regional criteria is that these criteria should identify all possible potential sites and not to discard any without appropriate justification.</u> ”	The statement is insufficiently clear				It seems to be clear. Discarding a whole region should be justified and based on clear defined regional criteria.

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron Country/Organization: France/ASN & IRSN		Page Date: 19 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
11.	3.8	“Exclusion criteria: the exclusion criteria are used to discard sites that are unacceptable from those attributes related to issues, or events or phenomena or hazards for which engineering solutions are not generally practicable. <u>Exclusion criteria are often derived as Screening Distance Value (SDV). SDV is the distance between the limits of a specific feature which has to be considered (such as a city, facility, geological structure, etc.) and the sites.</u> ”	Practical information			X	There is a reference to Annex I for example of various categories of screening criteria.
12.	3.9	The resulting candidate sites should then be placed in the order of preference through an exercise of comparison and ranking using suitable “ranking criteria”.	Typo	X			
13.	3.16	“Data collection related to potential and candidate sites should focus in particular on attributes of the sites that are relevant to the Exclusion criteria. <u>Impossibility of sufficient data collection should be an exclusion criterion.</u> ”	Insufficient knowledge of hazards should be an exclusion criterion.			X	Exclusion criteria are defined by NS-R-3, SSG-9, SSG-21.

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron Country/Organization: France/ASN & IRSN		Page Date: 19 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
14.	3.21	“For many of the attributes, there exists more than one quantification parameter (e.g. <del>the differential cost with respect to a reference site/plant combination</del> ) as the basis of comparison and ranking.”	Costs are not addressed in the other parts of the guide. Moreover, it seems very difficult to get such information on a reference site/plant.			X	Can be used in some cases to differentiate between sites.
15.	3.23	There are several issues which need special attention, when sites: • <del>were site was</del> selected in the context of an earlier nuclear installation project, are to be re-assessed to confirm up-to-date safety requirements • <del>were site was</del> discarded are re-considered for a new nuclear installation project.	Typo		X		Addressed by other MS comment.
16.	3.24 (a)	(a) Any design/ <u>construction</u> /operational restrictions arising from the way the existing installation is operated. For example, the heat sink requirements of the operation of existing facilities may have significant bearing on the design of heat sink system of the new one.	Construction phase is a long phase that could have an impact on other installation	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Country/Organization:		F. Féron France/ASN & IRSN		Page Date: 19 April 2013			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
17.	3.24 (b)	The radiological hazards arising from accidental events on the existing <del>site</del> <u>installation or new installation</u> involving release of nuclear materials and/or radiation shine.	To be consistent with the first sentence of 3.24	X			
18.	3.24 (c)	Conventional hazards arising from accidents on the existing <del>site</del> <u>installation or new installation</u> involving e.g. release of toxic chemicals, explosions, missiles, flooding, etc.	To be consistent with the first sentence of 3.24	X			
19.	3.24	<u>(x) Hazards arising from accident on both new and existing installations and consequential impacts</u>	Issues as accessibility, feasibility, potential impact of one accidental installation on the other one... are not clearly taken into account in the existing text	X			
20.	3.25	<u>There should be</u> Information exchange between site operators: The developers of the new site should expect the operators of the exiting site to seek information from them on the issues identified above.	Clarification				e.g. consider the impact between installations (new with existing) in various situations including emergency.

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron Country/Organization: France/ASN & IRSN		Page Date: 19 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
21.	4.3 (d) (e)	(d) Coastal flooding or low water intake level (both high flood levels and recedes due to <u>tides</u> , wave action, storm surges, seiches, tsunamis) <del>(e) Tsunamis in combinations with tides — sea water level variations and extremes.”</del>	Repetition	X			
22.	4.3 (i) (j)	(i) High winds, both straight winds such as hurricanes, tropical storms and rotational winds such as tornadoes, <del>local phenomena such as sand storms and dust storms.</del> (j) Other extreme meteorological events such as droughts, extreme precipitation, (including snow pack; <del>extreme and hail</del> ); <u>sand storms and dust storms</u> , extreme temperatures, (including the temperature of the source of the cooling water) and lightning.	Sand storm is not only wind		X		separate item for :sand storms and dust storms
23.	4.3 (j)	Other extreme meteorological events such as droughts, extreme precipitation, including snow pack; extreme hail; extreme ( <u>high and cold</u> ) temperatures, including the temperature of the source of the cooling water and lightning.	Clarification				



COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron Country/Organization: France/ASN & IRSN		Page Date: 19 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
24.	4.4 (a)	(a) Stationary sources (i) Oil and Gas operations, chemical plants, hazardous material processing e.g. commercial munitions plants or storage facilities, broadcasting and communication networks <u>generating electromagnetic interference</u> , mining or quarrying operations, other nuclear facilities, high energy rotating equipment, hydraulic engineering structures (ii) Military facilities (permanent or temporary) especially shooting ranges, arsenals <u>Electromagnetic interference</u>	Electronic interference is not to stand alone			X	Could be from lightening or manmade (broadcasting, etc.) There are nuclear standards dealing with this issue: e.g.: IEC 62003: Nuclear power plants Instrumentation and control important to safety - Requirements for electromagnetic compatibility testing

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Country/Organization:		F. Féron France/ASN & IRSN		Page Date: 19 April 2013			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
25.	4.4 (b)	<p>(a) Stationary sources (i) Oil and Gas operations, <u>pipelines</u> chemical plants, hazardous material processing e.g. commercial munitions ....</p> <p>(b) Mobile sources (i) Railway trains and wagons, road vehicles, ships, barges, <del>pipelines</del> (ii) Airport and harbour zones (both military and civilian) (iii) Air traffic corridors and flight zones (both military and civilian)</p>	Pipelines are not moving so they are a stationary sources.			X	The fluid is moving and leakage may happen anywhere – is according to NS-G-3.1
26.	4.5	<p>The third set of criteria is related to the characteristics of the site and its environment that could influence the transfer of radioactive material released from the nuclear installation* to people and the environment. In this context, the following phenomena should be considered:...</p> <p><u>* This could also be of interest for the transfer of other hazardous substances</u></p>	Add a footnote to make a link with non-radioactive hazardous substances	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron Country/Organization: France/ASN & IRSN		Page Date: 19 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
27.	5.8 (i)	Meteorological <del>extreme events and rare events</del> database	For consistency with the name of other databases and Appendix A. Content of database is described in appendix	X			
28.	6.1 (d)	Facilities for the predisposal management of radioactive waste arising from nuclear fuel cycle facilities. <sup>22</sup>	Typo	X			
29.	6.3 (k)	Monitoring instruments, control and <del>trip</del> automatic protection systems time response.	To be more general			X	Could be automatic trip system or not.
30.	6.5	Delete 6.5	Superfluous as it can be reminded in 6.6 (see next comment)			X	6.5 brings some clarifications.
31.	6.6	6.6. The grading process should be based on the following information: (a) ... (b) ... (c) ... (d) <u>national regulatory criteria, if any</u>	Add a bullet to cover input, if any, from the national regulatory framework	X			
32.	6.6 (c)	The characteristics specified in Para. 6.4 <del>5</del> .	Incorrect cross reference	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron Country/Organization: France/ASN & IRSN		Page Date: 19 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
33.	7.3	<del>The management system program for the siting process is a part of</del> <u>should be addressed in</u> the overall management system program for the nuclear installation project. The management system for siting should be established at the earliest possible time...	Clarification	X			
34.	7.7	When developing the part of the management system dealing with the siting process, the following should be <u>considered</u> :	Missing verb	X			
35.	7.8	In addition to general requirements, <u>through reference to the overall management system if relevant</u> , the work plan should delineate the following specific elements: personnel and their responsibilities; work breakdown and project tasks; schedule and milestones; and deliverables and reports.	To make an explicit link with the management system	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron		Page					
Country/Organization: France/ASN & IRSN		Date: 19 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
36.	Appendix A 20	At both the site survey and site selection stages, the suitability of the site is not solely determined by whether the site is inundated or not at particular return frequency events. Engineered solutions can be effected that can safeguard the site in many cases. For example, the installation grade could be built at a sufficiently elevated platform level to support the safety related structures and equipment for protection against these extreme events. <del>The site can also be protected from flooding by sea walls and dykes.</del>	At the siting stage, dykes and sea walls should not be considered as a reference for protection against flood.	X			
37.	Appendix A 31	This database provides information describing <del>extreme and rare</del> meteorological events, <u>including extreme and rare</u> , that could affect the potential or candidate sites.	“normal” weather is also of interest, for example for environmental impact assessment.	X			
38.	Annex 1 Table 1-1	Access to <u>(national or regional) electrical Grid</u>	Clarification	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Country/Organization:		F. Féron France/ASN & IRSN		Page Date: 19 April 2013			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
39.	Annex II II.4 1 i)	Site boundary and emergency zones; typically these are zones <del>demarcating 5km, 16km, (&gt;) 25 km, and 80km</del> of a few kilometres from centre of reactors [II-1, II-2, II-3], although these vary from country to country.	To avoid using numerical values.			X	Annex is not part of the guide – just provides examples from other MSs.
40.	Annex II II.5 2. iv)	f. Combinations of tides – sea water level variations and extremes g. <u>Combination of flooding with relevant meteorological events</u>	To consider coastal flooding + heavy rain for example	X			
41.	Annex II II.5 2. iv)	c. Blockage of river and other drainage channel d. <u>Combination of flooding with relevant meteorological events</u>	To consider river flooding + heavy rain for example	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron Country/Organization: France/ASN & IRSN		Page Date: 19 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
42.	Annex II II.6 1. and 2.	<p>1 Stationary sources</p> <p>i) Oil and Gas Operation (e.g. refineries)</p> <p><u>Pipelines</u></p> <p>ii) ...</p> <p>iii) ...</p> <p>iv) ...</p> <p>v) ...</p> <p>vi) ...</p> <p>vii) ...</p> <p>viii) ...</p> <p>ix) ...</p> <p>2 Mobile sources</p> <p>i) ...</p> <p>ii) ...</p> <p>iii) ...</p> <p>iv) <del>Pipelines</del></p> <p>v) ...</p> <p>vi) ...</p>	Pipelines are not moving so they are a stationary sources			X	As per NS-G-3.1.
43.	Annex II II.9 4.	<p>4. Availability of <u>electrical</u> power supply sources and transmission lines proximity to load centres</p> <p>i) Start-up power</p> <p>ii) Power evacuation scheme</p>	Clarification	X			Deleted - Unclear text
44.	/						
/	/						

**JapanNUSSC Comments on DS433 (2013/4/19)**  
**Safety Guide: Safety Aspects in Siting for Nuclear Installations**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:		Page 1 of 1					
Country Organization: Japan/NRA		Date 2013/4/ 19					
Comment No.	Para./Line No.	Proposed new text	Reason	Accepted	Accepted but modified as follows	Rejected	Reason for modify/rejection
1	1.8/L1	1.8 The <u>TEPCO's</u> Fukushima Daiichi <u>NPPs</u> accident ....	Addition of 'NPPs' is better.	X			
2	Section 7	To alter "APPLICATION OF MANAGEMENT" to "APPLICATION OF MANAGEMENT <u>SYSTEM</u> "	This section discusses aspects of "management system".	X			
3	REFERENCES	To move "REFERENCES" after APPENDIX-A	Some sentences in Appendix-A refer some reference numbers in References.				
4	Table I-1 Volcanism	Lahars( <u>massive</u> )	To consistent with SSG-21, scale conditions should be specified.	X			



**TITLE: Draft DS433Safety Aspects in Siting for Nuclear Installations**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Wladyslaw Kielbasa		Page 1 of 8					
Country/Organization: Poland / National Atomic Energy Agency (PAA)		Date: 2013-04-15					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	3.4	... In order to cater such situations, candidate sites should therefore be placed in an order of preference to allow the selection of a potentially suitable alternative site.	Editorial correction.	X			
2.	3.8/9	... These criteria, listed in Table I-1 of Annex I, ...	Editorial correction.	X			
3.	3.14/4	<ul style="list-style-type: none"> <li>increase the number of candidate sites if this number is too small or none.</li> </ul>	Editorial correction.	X			
4	3.15/2-6	... If candidate sites are dispersed to two or more regions with different attributes, this would prevent the eventual elimination of all the candidate sites due to a common and regional shortcoming, e.g. if two candidate sites are geographically widely separated then the seismic hazard may be widely different at each site.	Editorial correction.	X			

		Siting process of a nuclear installation is expected to be completed using existing data. ...					
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COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Wladyslaw Kielbasa		Page 2 of 8					
Country/Organization: Poland / National Atomic Energy Agency (PAA)		Date: 2013-04-15					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
5.	3.16	3.16. Data collection related to potential and candidate sites should focus in particular on attributes of the sites that are relevant to the exclusion criteria.	Editorial correction.	X			
6.	3.17	The format of numbering and text (italic font to be changed into normal) should be corrected.	Editorial correction.	X			
7.	3.17 item 2	2 Before a construction of the plant is started, it shall be confirmed that there will be no insurmountable difficulties in establishing an emergency plan for the emergency planning zone before the start of operation of the plant.	The emergency planning zone comprising the precautionary action zone (PAZ) and urgent protective action planning zone (UPZ) should be referred in here (see definitions provided in DS457, GS-R-2 and GS-G-2.1).			X	These words are coming from NS-R-3 and cannot be changed.
8.	3.17 item 8	8 Potential natural and human induced events <sup>4</sup> that could cause a loss of function of systems required for the long term removal of heat from the core should be identified, such as the blockage or diversion of a river, the depletion of a reservoir, an excessive amount of aquatic organisms, ...	The term “aquatic” is wider as it covers all aquatic organisms not only marine ones.			X	These words are coming from NS-R-3 and cannot be changed.

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Wladyslaw Kielbasa		Page 3 of 8					
Country/Organization: Poland / National Atomic Energy Agency (PAA)		Date: 2013-04-15					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
9.	3.23	<p>3.23. There are several issues which need special attention, in particular:</p> <ul style="list-style-type: none"> <li>▪ were the site was selected in the context of an earlier nuclear installation project, it is be re-assessed to confirm up-to-date safety requirements,</li> <li>▪ were the site that was discarded, it is to be re-considered for a new nuclear installation project.</li> </ul>	Editorial correction, to make the text clearer.		X		Already addressed by other comment.
10.	3.25	<p>3.25. Information exchange between site operators. The developers of the new site should expect the operators of the exiting site to seek information from them on the issues identified above. Similarly, the developers of the new site will need information from the existing site for operators to make their own safety judgments. It is therefore beneficial for both parties to establish a working relationship early on in the development of the</p>	Editorial correction.	X			

		new site, so that information on these issues can be made available to either party as and when needed.					
<p align="center"><b>COMMENTS BY REVIEWER</b></p> <p>Reviewer: Wladyslaw Kielbasa <span style="float: right;">Page 4 of 8</span>  Country/Organization: Poland / National Atomic Energy Agency (PAA) Date: 2013-04-15</p>				<p align="center"><b>RESOLUTION</b></p>			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
11.	4.3 (f-h)	<p>(f) River flooding (overtopping or failure of banks or levees due to intense precipitation or failure of upstream water retaining structures such as dykes or dams) or low water intake level (due to low river flows)</p> <p>(g) flash floods due to intense precipitation, dam or levee failure, or a sudden release of water held by a debris jam</p> <p>(h) Blockage of intake channels (by aquatic organisms, ice, debris, ship collisions, oil spills, fires, etc)</p> <p>(i) Combination of coastal and river flooding (e.g. in estuaries)</p>	<p>Re-edition to make the terms “river flooding” and “flash floods” complete and clearer. See for instance the flood terminology provided by the Pacific Disaster Center: <a href="http://www.pdc.org/iweb/floodterminology.jsp">http://www.pdc.org/iweb/floodterminology.jsp</a>.</p> <p>The term “flash floods” covers in particular catastrophic floods caused by potential failure of embankments and dams of artificial reservoirs such as upper pumped storage plant reservoirs.</p> <p>“Aquatic” instead of “marine” organisms - same as in item 8.</p>		x		Already addressed by France comments
12.	4.3 (j)	(j) Other extreme meteorological events such as droughts, extreme precipitation, including snow pack; extreme hail; lightning;	Editorial correction.	X			

		extreme temperatures, including the temperature of the source of the cooling water.					
13.	4.3	Semicolons should be used at the end of items from “(i)” and “(j)”, and a dot added at the end of item “(m)”.	Editorial correction.	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Wladyslaw Kielbasa		Page 5 of 8					
Country/Organization: Poland / National Atomic Energy Agency (PAA)		Date: 2013-04-15					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
14	4.4 (a-b)	(a) Stationary sources (i) Oil and gas operations, chemical plants, hazardous material processing e.g. commercial munitions plants or storage facilities, broadcasting and communication networks, mining or quarrying operations, other nuclear facilities, high energy rotating equipment, hydraulic engineering structures (ii) Military facilities (permanent or temporary) especially shooting ranges, arsenals (b) Mobile sources (i) Railway trains and wagons, road vehicles, ships, barges, pipelines (ii) Airport and harbour zones (both military and civilian) (iii) Air traffic corridors and flight zones (both military	Editorial corrections. The electromagnetic interference may come from stationary and/or mobile sources.	X			

		and civilian) (c) Electromagnetic interference.					
COMMENTS BY REVIEWER Reviewer: Wladyslaw Kielbasa Country/Organization: Poland / National Atomic Energy Agency (PAA) Date: 2013-04-15				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
15.	4.6 (c-f)	(c) Population (e.g. special groups of the population who are difficult to evacuate or shelter) and land and water use considerations  (d) Specific considerations prescribed by the regulatory body for zones, such as the exclusion area boundary, low population zone, etc.  (e) Industrial facilities which may entail potentially hazardous activities  (f) Agricultural activities that are sensitive to possible releases of radionuclides	Re-edition of item (c) and small editorial corrections introduced to three others.	X			
16.	4.8 (c)	(c) The evaluation of site characteristics (location, size and proposed site layout) for potential negative impacts between safety and security ("Safety/Security Interface").	Editorial corrections.	X			
17.	5.3/2-4	... The detail of different sets of data should be consistent with the	It is unclear how these details could be similar across	X			



		aims of the specific steps of the siting process and should be similar across different topics.	different topics?				
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COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Wladyslaw Kielbasa Country/Organization: Poland / National Atomic Energy Agency (PAA) Date: 2013-04-15				Page 7 of 8			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
18.	5.8 (k)	(k) Population, land and water use and environmental aspects database.	Water use should be added here (see also para. 4.6 (c)), plus the dot at the end.	X			
19.	5.9/1-3	5.9. For the screening and ranking criteria, one or more of these databases will be needed to judge whether the site should be kept or screened in or out, and if kept, how it should be ranked with respect to other candidate sites. ...	Editorial corrections to make the text simpler and clearer.		X		Modified by considering comment of another MS
20.	5.13	Semicolons should be used at the end of items from “(b)” and “(d)”.	Editorial corrections.				
21.	6.1/1-2	6.1. The graded approach as mentioned in Para. 1.16 provides guidance for the site survey and site selection for a broad range of nuclear installations other than nuclear power plants. ...	Editorial correction.	X			
22.	6.2/3	... of flammable, explosive, toxic or corrosive materials.	Editorial correction.	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Wladyslaw Kielbasa		Page 8 of 8					
Country/Organization: Poland / National Atomic Energy Agency (PAA)		Date: 2013-04-15					
23.	6.3/1-3	6.3. Prior to categorizing an installation if adopting a graded approach, a conservative process should be applied to estimate the consequences of a radiological release in which it is assumed that the entire radioactive inventory of the installation is released by an accident. ...	Wording “the entire radioactive inventory” is improper at least for nuclear reactors, as their entire radioactive inventory cannot be released even in case of the worst severe accident. The “release term” should be used instead and the text re-edited accordingly.		X		Addressed by US comment.
24.	6.4/1	6.4. The possibility that an external event will give rise to radiological consequences will depend on characteristics ...	Editorial correction - para. 6.4 should begin from a new indention.	X			
25.	6.4. (e)	(e) The concentration of radioactive sources in the installation (e.g. for nuclear power plants or research reactors, most of the radioactive inventory will be in the reactor core and the fuel storage pool, whereas in fuel processing and storage facilities it may be distributed throughout the installation);	In case of both nuclear power plants and research reactors most of the radioactive inventory will be in the reactor core and the fuel storage pool.	X			
26.	6.4. (j)	(j) The potential for on-site and off-site contamination;	Editorial correction: the dot replaced with the semicolon.	X			
27.	6.4. (k)	(k) Monitoring instruments, control and trip systems time	Wording “time response” is unclear here, something must	X			

		response.	be missing (maybe “with”?).				
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**TITLE : DS 433 Safety Aspects in Siting for Nuclear Installations**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Lovisa Wallin Caldwell, Anders Hallman		Page					
Country/Organization: Sweden		Date: 19/04/2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	Section 2, Page 5-7 (Clean version)	Give an overview of (or give a reference to) issues and aspects that have to be treated.	It is somewhat unclear in this section what issues and aspects that should be handled before a site selection can take place. (In the description of the second step relevant/needed documentation is given.)				Section 2 – is just a general description of siting and site evaluation process.
2.	Paragraph 3.23/Line No. 1 and first bullet  Page 6 (Clean version)	...up-to date safety requirements <b>since last PSR.</b>	Paragraph 3.23 needs to be clarified. For example, site re-assessment to confirm up-to-date safety requirements shall be an integrated part of the PSR (which is also explained in paragraph 2.4, line 7). It is therefore unclear what is meant by “issue” in this regard.			X	It means a site was selected or discarded sometimes back for a NI. Later it was decided to use this site. As such, re-assessment of this site with respect to this particular NI has to be made with up-to date safety requirements.

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Lovisa Wallin Caldwell, Anders Hallman		Page					
Country/Organization: Sweden		Date: 19/04/2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
3.	Paragraph 3.24 / Line No. 13, Bullet e)  Page 6 (Clean version)	(e) <b>Relevant hazardous events</b> , e.g., loss of grid supplies and most external hazards can initiate common cause faults on all the nuclear installations at the site and the effects of these should be considered.	In paragraph 3.24 e), the wording “some hazardous events” is used. This could preferably be updated so it is understood that all relevant hazardous events should be considered.	X			
4.	Paragraph 4.10  Page 11 (Clean version)	Add a footnote including some examples of “non-safety related criteria” to be considered.	To understand what is meant by “non-safety related criteria” in paragraph 4.10 (and 4.1), it would be beneficial if some examples are given in a footnote.	X			
5.	Paragraph 4.10/ Line No. 5,  Page 11 (Clean version)	4.10. In the site survey and site selection process another set of criteria are concerned with considerations that are not directly related to nuclear safety or protection against malevolent acts. They need to be considered together with the nuclear safety related aspects and aspects related to protection against malevolent acts in an interactive manner especially in the ranking of the candidate sites. See <b>reference</b> [11].	In this paragraph the wording “document” is used instead of “reference” which is used elsewhere in this guidance document. For constancy it would be preferred if there was one term used or if it could be explained why the term “reference” would not be appropriate.	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Lovisa Wallin Caldwell, Anders Hallman		Page					
Country/Organization: Sweden		Date: 19/04/2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
6.	Paragraph 5.8/ Line No. 1  Page 12 (Clean version)	5.8. There should be a site specific database, containing all relevant site characteristics, established during the siting process. This database should include the following data which are further elaborated in detail in Appendix-A: a) Geological data b) Hydrological data c) ...	Paragraph 5.8 refers to a number of data bases. Is there any reason why there shouldn't be "one" site characteristic database containing all relevant data for each site (i.e. incl. data regarding a) through k) )?	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Lovisa Wallin Caldwell, Anders Hallman		Page					
Country/Organization: Sweden		Date: 19/04/2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
7.	Paragraph 5.9  Page 12 (Clean version)	5.9. For the screening and ranking criteria, <b>the site characteristics should be used as a basis for the decision on whether a site should be kept or screened out</b> , and if a site is kept, how it should be ranked with respect to other candidate sites. <b>The decision for keeping or screening out a site could be based on conclusions drawn from one or more category of the site characteristics, as it is not always necessary to consider all categories</b> for every criterion. Each of the <b>categories of site characteristics</b> is described in Appendix A, and criteria associated with the <b>data</b> are listed in Table I-1.	The paragraph 5.9 could be clearer. For example, it is said that: "For the screening and ranking criteria, one or more of these databases will be needed to inform a judgment as to whether the site should be kept or screened in or out". However, the understanding is that all relevant data (for each criteria) should be considered during the screening process, but the decision for keeping or screening out a site could be based on conclusions drawn from one or more category of site characteristics.	X			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Lovisa Wallin Caldwell, Anders Hallman		Page					
Country/Organization: Sweden		Date: 19/04/2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
8.	Paragraph 6.5/Line No. 1  Page 15 (Clean version)	6.5. Depending on <b>the national requirements</b> , some or all of the above factors should be considered. For example, fuel damage, radioactive releases or doses may be the conditions or metrics of interest.	In paragraph 6.5, it is said that “Depending on the criteria of the regulatory body, some or all of the above factors should be considered”. It is not a given that a reader would understand what is meant by “the criteria of the regulatory body” in this regards.	X			

## SAFETY ASPECTS IN SITING FOR NUCLEAR INSTALLATIONS (DS 433, draft of 2011-05-02)

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:		Page 1 of 1					
Country/Organization: Ukraine/ State Scientific and Technical Centre for Nuclear and Radiation Safety		Date: 10 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	Para 2.4, line 7	Periodic Safety Review (PSR)	It seems better to decipher abbreviation "PSR" at the first reference to it	X			
2	Para 3.16	Add new phrase. "For comparison among the candidate sites at further steps of the siting process, data concerning discretionary criteria need to be collected and analysed "	For completeness			X	The existing sentence emphasizes that the exclusion criteria should be considered in the beginning as it can exclude a selected site at a later stage
3	Para 6.6, (c)	(c) The characteristics specified in Para 6.4	editorial	X			
COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Paseshchenko V.I. - Chief Specialist-Ecologist		Page: 1 of 1					
Country/Organization: Ukraine/PJSC KIEP		Date: 15 April 2013					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection



1	Para 3.7, line 2	Regional criteria are generally related to national domestic policy, national economic policy, <u>national and international environmental protection policy</u>	Environmental protection issues are a priority of national as well as international policies. It should be mentioned here			X	This is a different criteria means national policy to allocate certain areas for NPPs
2	Para 3.14, bullet 2	Discretionary criteria: the discretionary criteria are associated with those attributes related to issues, or events, or phenomena, or hazards, or considerations for which protective engineering solutions are available <u>or mitigating measures are feasible</u>	This addition regards the mitigation of negative environmental impacts of radiological as well as non-radiological nature such as endangerment of important species of local biota				
3	Para 3.21, line 6	For many of the attributes, there exists more than one quantification parameter (e.g. the differential cost with respect to a reference site/plant combination, <u>cost and benefit analysis with respect to ecology, human recourse issues etc</u> ) as the basis of comparison and ranking	Cost-benefit analysis is a reasonable tool for ranking particularly in ecological considerations		X  MSs can use any basis for ranking		

**DS433**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: Colin Potter Country/Organization: United Kingdom/Office for Nuclear Regulation Date: May 6 <sup>th</sup> 2013							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	General comment	Overall this guide is not of particularly high quality and so may not be of as much practical value to member states as it could have been. Part of the problem is that this new version draws too heavily on the previous published edition - whereas I think it would have benefited from a thorough rewrite.					
2	1.4	Add word 'at' to sentences 2 and 4: "...siting aims at decreasing	Improving clarity	x			
3	Para 1.6, sentence 2	Replace "This..." with "That..."	Editorial	x			
4	Para 1.10 sentence 1	Remove comma. Amend sentence 2: "... role to the nuclear regulatory..."	Improving clarity	x			
5	Para 1.11	Amend sentence 1 to: "...nuclear installation, or there are no adequate measures to protect people against...". Sentence 2 is not clear. Suggest amending to: "The siting process is intended where possible to eliminate unacceptable sites early, at the	Improving clarity		x		Changed by other comment.

		site selection stage, rather than at the later evaluation stage".					
6	Para 1.13	suggest rewording to clarify "As the siting process progresses, more and more sites are screened out. For the few potential sites that remain, safety considerations will become more pronounced."	Improving clarity	X			
7	Para 1.14	Final word should be plural - "...installations"	Editorial	X			
8	Para 1.15	The use of the word "collocation" is unusual in this context. The normal spelling is "co-location" or "colocation". A similar comment applies to footnote 2.	Spelling	X			
9	Para 1.17	Sentence 1, last word should be "purposes"	Editorial	X			
10	Para 2.5	Amend final sentence "The outcomes vis-à-vis ..."	Clarity	X			
11	Para 2.6	The word de-regulated implies that regulation has been removed, whereas the meaning is that the process is not regulated. Suggest the sentence reads: "The siting process is usually non-regulated and is not part of the licensing process".	Better wording	X			
12	Para 3.1	last sentence: Suggest amendment "...characteristics should facilitate the successful	Clarity		X		Addressed by other comments.

		implementation of mitigation measures in the event of an accidental release of radionuclides"					
13	Para 3.2	sentence 2. Suggest amending: "...criteria to screen out those with attributes which contribute unfavorably to the safety of the installation".	Clarity	X			
14	Para 3.4	Suggest amending to: "Detailed examination later, at the site assessment stage, may lead to a candidate site being found unsuitable and thus excluded. In order to cater for such situations, candidate sites should therefore be placed in an order of preference to allow the selection of a potentially suitable alternative site	Clarity	X			
15	Para 3.8	In both bullet points the word "or" is not needed in each list. So the first bullet should say: "...attributes related to issues, events, phenomena or hazards for which..." Change the second bullet to : "...related to issues, events, phenomena, hazards or other considerations for which..."	Editorial	X			
16	Para 3.13	"Screening out based on an arbitrary safety criterion..." sounds a little odd. Better to say: "Screening out solely on the basis	Clarity		X		Screening out based on an arbitrary criterion

		of hazards...”					
17	Para 3.15	Suggest second sentence reads: “If candidate sites are distributed over two or more regions ...” “... elimination of all the candidate sites due to a common regional shortcoming”. Then continue: “For instance, if two candidate sites are geographically widely separated then the seismic hazard may be widely different at each site.” I suggest a paragraph break here so the next paragraph begins: “3.16. The siting process should be based on existing data. However, at an early stage....”	Clarity		X		Addressed by other comments.
18	Para 3.17	First sentence – delete “to the siting process” (words not needed).	Editorial	X			
19	Para 3.21	The use of the term “reference site” may cause confusion as it may imply a reference to a site that already exists. Suggest this could be changed to “A standard or generic site”. In the penultimate sentence, I’m not sure what “site related load cases” means. Can this be clarified?	Clarity		X		Addressed by other comments.
20	Para 3.23	Reword the two bullets. <ul style="list-style-type: none"> <li>• “Which had been selected in the context of...”</li> <li>• “which had been previously</li> </ul>	Clarity	X			Addressed by other comments.

		discarded..."					
21	Para 3.23	Final sentence –"... lessons learned from recent external events..."	Clarity	X			
22	Para 3.24	Last sentence of introduction: "The impact of a new installation on or near to an existing site..."	Clarity	X			
23	Para 3.24 (a) – (f)	These use "installation" and "facility". There seems no intention to distinguish between the two, so suggest using just one word (eg. installation).	Editorial	X			
24	Para 3.24(f)	The numbered list starts at (ii) – is (i) missing?	Editorial	X			
25	Para 3.24(f)(ii)	Bullet 2. Second sentence is long and confusingly worded. Maybe best to terminate the sentence after "...are simultaneously challenged".	Clarity	X			
26	Para 3.24(f)(iii)	This seems superfluous. Suggest it is deleted.	Editorial	X			
27	Para 3.25	I can't see the need for "Information exchange between site operators". The para doesn't need a heading.	Editorial	X			
28	Para 3.25	1st sentence replace "exiting" by "existing".	Spelling	X			
29	Para 3.25	2 <sup>nd</sup> sentence doesn't seem to make sense. Should this read: "Similarly the operators of the existing site will need information from the developers to make their own safety judgments" ?	Clarity	X			Sentence deleted
30	Para	Modify to say "...level (considering	Clarity	X			

	4.3(d)	water flooding as well as receding due to ...")					
31	Para 4.3(h)	Replace (in estuaries, e.g.) by (e.g. estuaries).	Editorial	X			
32	Para 4.4	"Electromagnetic interference" should be separately numbered: i.e. "(iii) Electromagnetic interference"	Editorial	X			
33	Para 4.6 (e)	I assume the concern here is the sheltering/evacuation of the operators and the possible risks that might then arise from the unattended hazards? It is not clear.	Clarity				e.g. storage of, chemicals, LPGs, ammonia, etc.
34	Para 4.6(f)	Similarly – is the concern here the protection of agricultural workers ? It is not clear.	Clarity	X			deleted
35	Para 5.2	Amend last line: "...resolution) and progress to local data..."	Clarity				More accurate data and higher resolution maps are used for the site vicinity and site area as compared with the regional scale.
36	Para 5.3	Not sure why the words "subject" and "subjects" are used here. Suggest replacing them with "topic" /"topics" for consistency.	Editorial	X			
37	Para 5.9	Line 2. Amend to "... should be kept or screened out, ..."	Editorial	X			

38	Para 6.8	I find the meaning of this paragraph unclear. Suggest it is rephrased to improve clarity.	Clarity	X			
39	Para 6.9	The referred to Paragraphs 4.11 and 4.12 do not exist. Should this reference be to Paragraphs 4.8 – 4.10 ?	Editorial	X			Ref to 4.10
40	Para 7.7	Line 2, missing words? Should this read: "...the following should be taken into account:" ?	Editorial	X			