Comments on draft *REGDOC-1.2.1, Guidance on Deep Geological Repository Site Characterization*

#	Document/ Excerpt of Section	Industry Issue	Suggested Change (*if applicable*)	Major Comment/ *Request for Clarification* [1]	Impact on Industry, if major comment
1.	**General**	The CNSC is clear, in both the title of this draft REGDOC and in its Purpose clause, that this is a guidance-only document for a DGR's site characterization process. Yet this draft uses language (the "shall-should-may" convention) that is normally associated with codes, standards and REGDOCs that define requirements. The extensive use of words like "should" and "recommended" could unintentionally lead readers to confuse guidance for requirements.	To ensure the intent of this guidance-only document remains clear, industry urges the CNSC to substitute the word "**may**" for "**should**" and "**recommended**" throughout the REGDOC.	**MAJOR**	Unclear guidance could lead to inefficient planning and unnecessary expenditures by potential DGR proponents.
2.	**General**	Discussion of the siting process throughout this draft distracts from the document's intended focus on site characterization.	To keep the document's focus clearly on site characterization, industry urges the CNSC to: 1) Remove Section 2. 2) Remove all references to the siting process in other sections or amend where necessary to keep the focus on site characterization. For example, revise: • The last sentence of the Purpose to read, "…aspects that may be considered during the site characterization ~~stage of the siting process~~ for a DGR facility…" • The opening sentence of the 4th paragraph of Section 3.1 to read, , "As ~~siting~~ work progresses, more extensive geological information would be gathered …"	Minor	

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			• The opening sentence of Section 3.1.1 to read, "The geological characteristics, in combination with the engineered barriers and the design of the DGR, should indicate that a DGR at the chosen site would remain safe for the entire time period of concern ~~– for tens of thousands to millions of years~~." • Delete the opening sentence of Section 4: "~~The siting process will collect information that will eventually be included in the safety case for a DGR.~~ • Delete the first three paragraphs of Section 6, starting the section with the sentence, "It is import for the licence applicant …"		
3.	**General**	Some phraseology in the document is not clearly aligned with the Class I regulations. For example, in the 3rd paragraph of *Section 2.3, Site characterization stage*, the reference to "preliminary safety assessments" at this stage could be confused with the "preliminary safety analysis report" needed for the licence to construct, per the Class I regulations. Additionally, the reference to "final safety assessment" in *Section 2.4, Site confirmation stage,* could be confused with the "final safety analysis report" needed for the licence to operate, per Class I regulations. It also suggests this is needed for the "initial	Ensure alignment with the Canadian regulatory framework.	**MAJOR**	Potential for proponents to be misaligned with the regulatory framework.

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		licence application," which may only be a licence to prepare the site. This section also refers to the possibility of sinking the shaft and constructing an Underground Research Facility. These activities are also at odds with the environmental assessment process and licensing since it suggests this could happen beforehand.			
4.	**1**	The term "several hundred metres or more below the surface" in the Introduction could lead to confusion on how deep a DGR is expected to be.	Revise the sentence to read, "A deep geological repository (DGR) is an engineered facility where radioactive waste is emplaced in a deep, stable geological formation ~~(usually several hundred metres or more below the surface)~~ designed to isolate and contain radioactive waste to provide the long-term isolation of nuclear substances from the biosphere."	Clarification	
5.	**1.3**	Section 1.3 on Relevant Legislation refers to both the current environmental assessment process and the new proposed legislation on impact assessment. It also speculates on the trigger for the new process.	Section 1.3 should simply refer to the current legislation or note that a new process is under review.	Minor	
6.	**1.4**	The last paragraph is suggesting the CNSC should have access to applicants' materials/data "to conduct independ-ent research." Such research may not be perceived as independent.	Change the last sentence to read, **"**Prior to a formal application being submitted, CNSC staff may also request data, results and materials from the site characterization activities ~~in order, for example, for the CNSC to conduct independent research~~."	Minor	
7.	**3**	The 4th paragraph, 2nd sentence, says, "Specific criteria ... may constitute recommendations." This is not clear.	Industry suggests this sentence be removed.	Clarification	

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8.	**3**	The 5th paragraph is a repeat of earlier text from Section 1.2.	Industry suggests the 5th paragraph be deleted from Section 3.	Clarification	
9.	**3.1**	A minor revision is suggested to the 2nd bullet to clarify that future stability can only be expected or projected.	Revise the 2nd bullet to read, "• past and <u>expected/projected</u> future geological stability of the site, including orogeny, seismicity, glaciation and volcanism"	Minor	
10.	**3.1.3**	Industry seeks clarification that the final sentence applies only to processes that are credible or significant.	Revise the sentence to read, "Any process that can be shown to demonstrate the potential for <u>credible and/or significant</u> radionuclide migration or retardation from the DGR engineered facility through the geological environment should be documented."	Clarification	
11.	**3.1.4**	The qualification of a seismically stable region should be clarified.	Amend the first sentence to read, "The site should be located in a seismically stable region, with low potential for <u>large magnitude</u> seismic or volcanic events."	Clarification	
12.	**3.2**	The section on surface environment covers aspects of environmental considerations for a waste management facility during the pre-closure phase of the DGR.	The relationship between section 3.2 and the impact assessment legislation should be clarified.	Minor	

13.	**3.2.1**	This section suggests that 30 years of climate normal data is needed without any context. Also, clarification is required to acknowledge:
		• The term precipitation includes rain and/or snow events.
		• Extreme and average data may not be available for a specific site so extreme and average data on a
			Industry suggests the CNSC:
			• Make it clear that regional data addresses the first point.
			• Revise the 3rd and 4th bullets to read:
			  • regional and local precipitation characteris-tics ~~(precipitation and snow)~~
			  • extreme and average data on temperature, precipitation, ~~snow,~~ wind speed and any
				Clarification	

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		regional basis should be considered.	other relevant phenomenon ~~for the chosen site~~ on a regional basis.		
14.	**3.2.3**	Clarity is sought on the opening sentence, which reads, "The drainage systems in the area should be assessed to determine the confining capacity of the site during the pre-closure period of the DGR facility." Information on regional water table characteristics, including seasonality, may not be important to the site, or needed in detail; this would need to be assessed in site-specific context.	Confirm that this applies only to surface water along with flooding and storm water management capacity. Revise the final bullet to read: • "~~regional and local~~ water table characteristics, and seasonality	Clarification	
15.	**4**	It is not clear what could be considered "known and potential for competing land-use activities at the proposed site" from the geological perspective and beyond resource potential.	The 2nd bullet in the 2nd paragraph should be removed since resource potential has already been addressed in this section.	Clarification	
16.	**5.3**	There is a detailed list in this section of what should be in the site characterization program and it is focused on boreholes. It is unclear why these items are listed in the section on sampling and testing procedures.	Move the list to Section 3 and consider clarifying the focus on boreholes.	Clarification	
17.	**6.0**	Given the document's focus on site characterization (see comment #2), this section should address the site	Remove the first three paragraphs of this section and clarify whether the discussion is strictly with respect to URF or, applicable to all:	Clarification	

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		characterization and/or regulatory approval process for an underground research facility rather than a discussion of the attributes of URFs.	• Licence applicants' plans for verification of site characteristics. • Early discussions with the CNSC on those plans.		
18.	**References**	Reference 6 from the European regulator group WENRA is only used in one place in this REGDOC to support a general statement about site characterization program. This WENRA report is about overall safety expectations for a disposal facility; site characterization is only mentioned at a very general level (p.42) and the report does not offer any more detail than is already included in the draft REGDOC. Furthermore, much of this document is referenced to IAEA standards such as SSG-23.	Recommend deleting Reference 6 from this REGDOC since it offers no particular insight on the topic of site characterization that is not already covered by IAEA documents.	Minor	