



Candu Copyright

June 20, 2014

53A-CECC14-0004L

Canadian Nuclear Safety Commission,
P.O. Box 1046, Station 'B',
280 Slater Street,
Ottawa, Ontario K1P 5S9

To Whom It May Concern,

Re: Candu Energy Inc.'s Comments on Draft REGDOC-2.3.1, "Conduct of Licensed Activities: Construction of Reactor Facilities"

The purpose of this letter is to provide Candu Energy Inc.'s comments on draft REGDOC-2.3.1, "Conduct of Licensed Activities: Construction of Reactor Facilities". The comments attached to this letter also include a consolidated set of Industry comments.

As an observation, this draft document represents Canadian good practices for planning, monitoring and conducting construction activities for reactor facilities. However, there are many "shall" statements associated with good practices for project management and licensee/contractor interfaces that are beyond the mandate for regulatory oversight under the Nuclear Safety and Control Act, which could be included as guidance. This regulatory document needs to be revised to clarify and separate regulatory requirements (i.e., "shall" statements) from guidance ("should" statements). Nevertheless, Candu Energy Inc.'s preference would be to remove all guidance statements associated with good practices for project management and licensee/contractor interfaces that are beyond the mandate for regulatory oversight, because these good practices are already reflected in recognized standards, such as those issued by the Canadian Standards Association.

Furthermore, there are overlaps between the requirements in this regulatory document and safety management system standards, e.g., CSA N286-05, "Management System Requirements for Nuclear Power Plants". The text should be reviewed to avoid overlapping requirements, and limit the focus of this document to the specific requirements needed for regulatory compliance and verification of licensed activities.

Sincerely,

A handwritten signature in blue ink that reads "Albert Lee".

Albert Lee
Manager,
Project Physics, Licensing & Safety
(905) 823-9040, Ext. 36415

Cc: D. Yang, F. Yee, J. Ballyk, N. Anghelidis, S. Yu, P. Guselle

Attachments:

- A. Candu Energy Inc.'s Comments on REGDOC-2.3.1, "Conduct of Licensed Activities: Construction of Reactor Facilities"

Attachment A

Candu Energy Inc.’s Comments on REGDOC-2.3.1, “Conduct of Licensed Activities: Construction of Reactor Facilities”

#	Document Section	Industry Issue	Suggested Change (if applicable)	Major Comment/ Request for Clarification	Impact on Industry, if major comment
1.	General	<p>Section 1.2, “Scope” states: <i>This regulatory document is applicable to the activities carried out under a construction licence for a new reactor facility and to a major modification/refurbishment of an existing reactor facility.</i></p> <p>The document focuses on requirements for construction activities and doesn’t identify which requirements are applicable for a major modification/refurbishment.</p>	Suggest removing references to major modifications/ refurbishment from this document and put the applicable requirements in a separate document dedicated to major modifications/ refurbishment.	Major	This regulatory document should focus on New Build Construction. Existing stations are currently following approved procedures for modification/refurbishment and having to comply with all of the requirements in this document can lead to inconsistencies and additional costs related to contract modifications.
2.	General	This document is similar to the recent commissioning document in that it imposes requirements on Management System, Training and Aging Management (as examples). Given that there are already existing standards and REGDOCs covering these aspects, this document should not try to override those documents. Some high level guidance strictly related to construction in those areas may be acceptable, however these should not be requirements as they would be already be fulfilled to obtain a construction licence.	Suggest revising this regulatory document to limit the focus to regulatory requirements for construction activities.	Clarification	
3.	General	This document does not appear to align with the Construction Licence Application Guide (RD/GD-369).	Suggest reviewing and revising this regulatory document to align with RD/GD-369, “Licence Application Guide: Licence to Construct a Nuclear Power Plant”, since the	Clarification	

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			requirements in this document are intended to be included in a licence condition after the construction licence is issued, and the licence application would be included in the licensing basis.		
4.	Preface	This REGDOC is a companion piece to "Commissioning of Reactor Facilities", which was available for review in November of 2013 and commented on by Industry. Before publication, these two documents will be put together as discrete parts of a larger document entitled REGDOC-2.3.1, "Operating Performance: Conduct of Licensed Activities".	Suggest providing the industry with an opportunity to comment on the REGDOC once the two companion documents are consolidated into REGDOC-2.3.1, "Operating Performance: Conduct of Licensed Activities".	Clarification	
5.	2 <i>The licensee has the primary responsibility for the safety and security of its licensed reactor facility, including responsibility for activities carried out by contractors. This responsibility covers all aspects related to the facility's construction and includes:</i>	The first sentence should be stated as a requirement, and the second sentence and the numbered bullets after the second sentence should be placed under guidance to describe the CNSC expectations for the scope of the responsibilities.	Suggest changing text as follows: Requirement The licensee shall have the primary responsibility for the safety and security of its licensed reactor facility, including responsibility for activities carried out by contractors. Guidance This responsibility covers all aspects related to the facility's construction and includes: ...	Clarification	
6.	2., Item 1	More common term is "smart/intelligent buyer."	Suggest replacing "intelligent customer" with "intelligent/smart buyer".	Clarification	

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7.	2., item 2	Shared goals and processes is a good project management practice.	Suggest deleting item 2 or revising the text such that it is expressed as guidance or as an option.	Major	These statements overlap with the requirements in safety management system standards, such as CSA N-286.
8.	2.	Some of the items listed as Licensee responsibilities are not necessarily performed by the Licensee, but the Licensee is responsible to ensure that they are completed. For example: <ul style="list-style-type: none"> 7. <i>preparing and updating construction program documents</i> 8. <i>establishing construction instructions and procedures</i> 9. <i>Performing inspections, tests and verification of items important to safety</i> 10. <i>Evaluating inspection findings and reporting the evaluation results to the CNSC</i> 	Suggest revising items 7 through 10 as follows: <ul style="list-style-type: none"> 7. ensuring construction program documents are prepared and updated 8. ensuring construction instructions and procedures are established 9. ensuring inspections, tests and verification of items important to safety are performed 10. ensuring inspection findings are evaluated and reporting the evaluation results to the CNSC 	Clarification	
9.	2., Note 1	Organization may be performing oversight to ensure supervisors are trained and supervision is effective, vs. performing the supervision.	Suggest changing text to: “...an organization that knows what is required ,... provides adequate oversight and/or supervises the work and technically reviews the output before, during and after implementation.”	Major	Lack of continuity between this note and section 3. Need to allow flexibility for contract supervisors to supervise work, while licensee still ensures that quality is maintained.
10.	3.	It mandates CSA 286-12 whereas the licensee should actually be directed towards the standard listed in their licence.	Suggest deleting the version number for CSA 286	Clarification	

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11.	3.1.2	<p>The requirement for agreement upon the interfaces can be interpreted to mean that the CNSC has to agree upon the interfaces between:</p> <ul style="list-style-type: none"> • The licensee and the reactor designer, and/or • the reactor designer, manufacturers, construction organizations and contractors. 	<p>Suggest changing text to:</p> <p>“Before construction starts, the interfaces between the licensee, the CNSC and other regulatory authorities shall be defined, agreed upon and understood such that the CNSC and other regulatory authorities are provided with relevant performance issues that have affected, or have the potential to affect, the quality of construction and future operational safety.”</p>	Major	As written, the requirement could be interpreted to mean that the CNSC and other regulatory authorities have a role in the contractual arrangements from a business perspective which would exceed their regulatory mandate.
12.	3.1.3	<p>As written, the requirement is overlapping the requirements in CSA N286-12.</p> <p>Also, it is suggested that item 2.b include the need to control foreign material impacts.</p> <p>For item 3.b, history docket are reviewed once projects are complete, or the equipment is turned over to a Licensee. Licensees don't necessarily review contractor purchasing documentation <i>prior</i> to a PO being placed. Hence the focus should be placed on verifying that the specifications used for purchasing equipment, materials and components have been met.</p>	<p>Suggest changing text as follows:</p> <p>Requirement</p> <p>The licensee shall develop measures to ensure that contractors and sub-contractors meet their respective contractual obligations in accordance with an appropriate safety management system.</p> <p>The licensee shall maintain records of its oversight activities and report to the CNSC relevant contractor performance that has affected, or has the potential to affect, the quality of construction and future operational safety.</p> <p>Guidance</p>	Major	As written, the requirement could be interpreted to mean that the CNSC has a role in the contractual arrangements from a business perspective which would exceed their regulatory mandate.

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			<p>Examples of contractual obligations where performance has the potential to affect the quality of construction and future operational safety performance include:</p> <ol style="list-style-type: none"> 1. for selection of contractors: <ol style="list-style-type: none"> a. confirmation that the contractors have the ability to supply the goods or service b. acceptance of the contractor's management system through review of documentation and audit c. confirmation that the contractor understands all regulatory requirements d. resolution of any exceptions the contractor has to the licensee's requirements e. reviews of contractor submissions against requirements 2. for contract management: <ol style="list-style-type: none"> a. evidence of a positive safety culture b. evidence that the contractor satisfies all contractual requirements related to health and safety, environment, security, control of materials and quality c. communication and relationships among all parties that are open and constructive, and identification of 		

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			<p>problems before they become serious</p> <ul style="list-style-type: none"> d. contract is administered through management of change, performance monitoring and monitoring of work progress e. problem identification and resolution, and effective corrective action programs f. control of emergent work g. processes to manage claims and disputes <p>3. for contractor supply chain (manufacturing and construction) activities:</p> <ul style="list-style-type: none"> a. pre-screening of sub-contractors used by the contractor, to ensure the sub-contractors are acceptable and to incorporate them into the licensee's supply chain program b. review of contractor purchasing documentation to confirm specifications for purchasing have been met c. review of contractor manufacturing or construction documentation, including quality plans/manufacturing and inspection and test plans, and special process procedures d. source verification and audits, 		

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			<p>during manufacturing and construction, to verify compliance of the contractor or its sub-contractors</p> <p>e. review and disposition of any contractor non-conformances to requirements</p> <p>The above guidance should also extend to the contractor's measures to ensure its sub-contractors meet their respective contractual obligations.</p>		
13.	4. Item 3	The requirement " <i>the design is sufficiently complete</i> " is ambiguous and has historically caused significant debate on when it is achieved.	<p>Suggest revising the text as follows:</p> <p>3. the design is sufficiently complete, as agreed between the licensee and the contractor, and any incomplete areas have been identified</p>	Clarification	
14.	4., item 14	Too vague – what is the starting point by which we ought to assure infrastructure is in place? Construction will have to have started in order to get the infrastructure in place.	<p>Suggest revising the text as follows:</p> <p>14. infrastructure support systems – including required electricity, gas and water supply, fire protection, protection or coverage of SSCs after work installation (including maintaining environmental qualification) – are in place at a level commensurate with the progress of construction activities</p>	Clarification	

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15.	4., item 15	The quality of construction cranes, scaffolds, temporary structures and temporary equipment is governed by provincial laws and regulations.	Suggest changing text to: 15. construction processes and equipment, such as cranes, scaffolding, temporary structures, portable equipment, and flammable equipment, meet jurisdictional requirements	Clarification	
16.	4. Para. 4	This paragraph regarding training of personnel involved in commissioning etc. does not belong in a regulatory document on construction of nuclear reactors	Move paragraph to commissioning portion of the combined regulatory document.	Clarification	
17.	6.3, Item 5.	Assessment of evacuation times is new and not something Licensees do for existing facilities.	Suggest changing text to: “Emergency Preparedness shall considerevacuation times ...”.	Clarification	
18.	6.3, para. 3	The terms “nearby” and “in close proximity” are open to interpretation. Suggest being more specific. This paragraph should also be considered as guidance and not a requirement	Suggest replacing the terms “nearby” and “in close proximity” with more specific descriptions. Also suggest revising the text as follows: Guidance Sites without an existing nuclear facility nearby should be able to support their emergency response needs independently. If an existing nuclear facility is in close proximity, mutual aid agreements may be put in place to support emergency response.		

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			As construction proceeds the licensee should ensure that emergency measures in place are commensurate with onsite hazards.		
19.	6.4 ... such spent fuel pools ...	Editorial	Change text to: ... such as spent fuel pools ...	Clarification	
20.	6.5	Clarification is required for the exact meaning of the term “controls”.	Suggest changing text to: “Fire protection controls, i.e. temporary measures to mitigate potential fires , shall be available until final systems for plant fire detection, ...”	Clarification	
21.	6.7	REGDOC-2.6.3 is not a draft document. It was issued in March 2014.	Suggest deleting “(draft)” from the reference to REGDOC -2.6.3.	Clarification	
22.	7.1, Para. 1	The text includes a requirement that is applicable to regulatory bodies, and recommended good practices. It is suggested that the text be split into a requirement and guidance.	Suggest revising the text as follows: Requirement Planning, scheduling and work sequencing shall identify and include provisions for hold and witness points by various parties, such as the licensee, architects/engineers, authorized inspection agencies and the CNSC. Guidance To ensure construction sequencing will not be adversely affected by later construction	Major	As written, the requirement is not technology neutral and enters into the business transaction aspects of the interface between the licensee and the construction contractor.

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			activities, planning, scheduling and work sequencing should identify and include provisions for: <ol style="list-style-type: none"> 1. items with long lead times (long-lead items) 2. onsite manufacturing, modular assembly and testing activities. 		
23.	7.1, Para. 2 <i>Consideration shall be given to the form of cast-in components and plant fixtures so that post-drilling of concrete is kept to a minimum.</i>	Suggest revising such that the text is split into a requirement and guidance.	Suggest revising the text as follows: Requirement Post-drilling of concrete shall be kept to a minimum. Guidance Consideration should be given to the design of components and plant fixtures, such as the form of cast-in components, so that post-drilling of concrete is kept to a minimum.	Clarification	
24.	7.2 Environmental limits such as temperature, pressure, humidity, dust, dirt, airborne salt, wind, and electromagnetic conditions during construction work shall be specified. Environmental	Suggest revising the requirement for greater clarity and separating the requirement from guidance.	Suggest changing text to: Requirement Environmental conditions shall be confirmed to remain within their allowable limits by periodic monitoring. Guidance Examples of environmental conditions during construction work where allowable limits	Clarification	

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	conditions shall be periodically monitored to confirm they are within allowable limits.		should be specified include temperature, pressure, humidity, dust, dirt, airborne salt, wind, and electromagnetic conditions.		
25.	7.3 para. 3 & 4	These paragraphs are not regulatory requirements, and if not removed, should be revised such that they are expressed as guidance.	Suggest removing this text or revising to express as guidance.	Clarification	
26.	7.4	These requirements are not considered part of Construction.	Delete text from construction part of REGDOC-2.3.1, and move text to commissioning part of REGDOC-2.3.1.	Clarification	
27.	7.4, para. 1	Missing lay-up requirement.	Suggest changing the text to: Fluid and gas piping systems, and associated components shall be laid up , cleaned, flushed and conditioned according to applicable chemistry requirements.	Clarification	
28.	7.4, item 3	It is unclear what the term “ <i>storage capacities</i> ” means. Does it refer to storage of chemicals?	Suggest revising the requirement to provide clarification.	Clarification	
29.	7.4, item 6	It is unclear what the term “ <i>recycling</i> ” means. Does this mean recirculation?	Suggest replacing the term “recycling” with “system recirculation.”	Clarification	
30.	7.4 8.4 9.	The term used in CSA N286 for “transfer” is “turnover”.	Suggest replacing instances of “transfer” with “turnover” as appropriate	Clarification	
31.	8.1, Guidance item 10	Additional requirements on cleanliness of components are missing. Assurance is needed that components are	Suggest revising the text as follows: 10. the compatibility of cleaning methods and materials with the components	Clarification	

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		free of surface FME to avoid issues on restart.	being cleaned and cleanliness of components after cleaning. The latter includes any remnants of preservatives or cleaning agents on components before installation.		
32.	8.1	<p>Most of Section 8.1 belongs in REGDOC-2.5.2, because the technical documents for procurement are an engineering activity, not a construction activity.</p> <p>The right of access to facilities and records for witness points or audit by the CNSC should be kept with this document.</p>	<p>Suggest changing text in section 8.1 to:</p> <p>“The licensee shall ensure right of access to facilities and records for witness points or audit by the CNSC.”</p> <p>Suggest moving the remainder of the text in Section 8.1 to a new section in REGDOC-2.5.2.</p>	Major	Engineering activities should be contained within REGDOC-2.5.2.
33.	8.2	The text in Section 8.2 includes a combination of requirements and guidance.	<p>Suggest revising the text in Section 8.2 as follows:</p> <p>Requirements</p> <p>Any differences between the original purchasing requirements, the licence-to-construct design basis and the as-built items shall be evaluated, reconciled and reported to the CNSC.</p> <p>Guidance</p> <p>The procurement of long-lead items is entirely at the licensee’s risk. Submissions for procurement of items for which the licensee seeks CNSC acceptance, prior to the application for a licence to construct, will be</p>	Clarification	

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			<p>reviewed on a case-by-case basis.</p> <p>When the licensee/applicant proceeds with procurement of long-lead items, the submissions should include the following information: ...</p>		
34.	8.3.1	One of the purposes of this section is to eliminate counterfeit items. However this is not explicitly stated. Add that one of the reasons for inspection and identification of components is to eliminate counterfeit items.	<p>Suggest adding the following to 8.3.1:</p> <p>12. counterfeit, fraudulent and suspect items have not entered the construction site</p>	Clarification	
35.	8.3.1 8.3.2 8.3.3 8.3.4	The Industry does not consider that the requirements in these sections apply to ALL components that are received. Suggest excluding low cost, easily replaceable components, or limiting it to components used in some sub-set of station systems.	Section 8.3.7 refers to “items important to safety of nuclear facilities”. Suggest similar wording be incorporated into these sections.	Major	The statements as written have licensees doing a very detailed receipt inspection on every box of light switches. They make every cardboard box subject to being qualified. The section establishes sensible requirements, but It is not believed that the universal applicability of the requirements is what was intended. A graded approach that is commensurate with the safety significance of the items should be reflected in the statement of the requirement.
36.	8.3.7, para. 4	This text provides guidance.	<p>Suggest revising the text as follows:</p> <p>Guidance Examples of onsite manufacturing include:</p> <ol style="list-style-type: none"> 1. concrete production in a concrete batch plant 2. rebar assembly 	Clarification	

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			3. pipe spool fabrication 4. modular assembly, such as: <ul style="list-style-type: none"> a. mechanical modules: structural equipment on a common structural frame, along with interconnecting piping, valves, instruments and wiring b. structural modules: liner, wall, floor, heat sink floor, turbine pedestal form, stairs, platform, structural steel, and space frame modules; some structural modules may include leave-in-place formwork for concrete c. piping modules: pipe, valves, valve tree, pumps and associated instrumentation and wiring on a common structural frames d. electrical modules: electrical modules on a common structural frame 		
37.	8.3.7, para. 5	Licensee may only ensure that the rules and procedures are established for onsite testing facilities.	Suggest changing text to: “Ensure the rules and procedures are established for onsite testing facilities”	Clarification	

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38.	8.3.7, para 5, bullet 1.	Suggest changing the text to encompass the entire concrete and backfill construction	Suggest changing text to: "Concrete mix, core extraction and testing for the entire concrete and backfill program in accordance with the technical specifications covering the supply of concrete and backfill"	Clarification	
39.	8.4, para. 2.	The process for completion assurance is covered in CSA N286 (which the Industry is required to comply with) and therefore does not require repeating in the REGDOC.	Suggest deleting the second paragraph.	Clarification	
40.	9.1	The requirements for turnover are well defined in safety management standards, e.g., Clause 6.9 of CSA N286-05. The current text should be revised to illustrate CNSC expectations under guidance.	Suggest revising the text as follows: Requirement The licensee shall ensure that a process for turnover of structures, systems and components is established in accordance with an applicable safety management standard. Guidance Rules and procedures should be established to control and coordinate the handover of completed work and associated facility configuration information from one party to another (for example, from civil to mechanical, piping and electrical) to maintain completed work integrity. Access	Clarification	

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			<p>control for SSCs and working areas shall also be established and implemented for the transfer. Transfer requirements and responsibilities shall be documented.</p> <p>When SSC and areas are to be transferred between parties within the construction organization or contractors, both parties shall jointly check the transferred SSC and area, and the facility configuration information, at the location in question. Configuration of the components and working areas, addressing any identified deficiencies, shall be agreed upon by both parties.</p> <p>After transfer, further work or corrective actions by the previous party should only be done with appropriate authorization by the party to whom the work has been transferred and the licensee.</p>		
41.	9.1 and 9.2	Licensees and CSA N286 use the term "turnover" instead of "handover".	Suggest replacing "handover" with "turnover".	Clarification	
42.	11., para. 1	Suggest revising the requirement to clarify the intent.	<p>Suggest changing text to:</p> <p>"The control of construction records shall be established at the beginning of the construction program for input into the schedule for accomplishing construction activities."</p>	Clarification	

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43.	11., Para. 2	Suggest revising to clarify requirements and guidance.	<p>Suggest revising the text as follows:</p> <p>Requirement</p> <p>Construction records shall be compiled, particularly in inaccessible areas or areas that will be subject to intense radiation, to facilitate the planning of work in these areas during commissioning, operation and decommissioning. These visual construction records of as-built conditions shall show identification marks and shall be catalogued with descriptive captions. This will ensure that visual records made during subsequent inspections or maintenance work can be easily compared, and will help in any work preparation.</p> <p>Guidance</p> <p>Construction records should include photographic and, where appropriate, video records and computer simulations.</p>	Clarification	
44.	Glossary	The definition of “construction” in the Glossary includes procurement and manufacturing, which are not considered to be part of construction. The preparation of technical specifications for procurement is an engineering activity.	<p>Suggesting changing text to</p> <p>“The process of assembling the components, including on-site manufacturing, carrying out civil work, installing and maintaining components and systems, and performing associated tests.”</p>	Clarification	