

REGDOC-2.3.1: *Construction of Reactor Facilities*

Comments submitted by J. Froats, University of Ontario Institute of Technology, during first round of public consultation (April 24 to June 24, 2014)

	Section	Comment
1.	1.2	Facilities that will undergo refurbishment are covered by an operating licence, the CSA N286 program specified by that licence and will be governed by an Engineering Change Control managed system that will cover modification, modification testing, and all associated processes. It would seem much clearer to separate this type of facility from new construction. Concepts are similar but application is quite different.
2.	1.2	The scope suggests the document will apply to refurbishment and modification at existing facilities. Later in the document it talks about a construction licence being applicable. Facilities operating under an existing operating licence already have requirements to meet a CSA N286 program and to have programs to define Engineering Change Control and the configuration management implications associated with it. The management of the construction type of activity associated with modification and refurbishment work under a mature operating organization is quite different than during initial construction. It seems to confuse the document by not limiting the scope to the construction phase of the project life cycle and dealing with modification work in the operating cycle framework.
3.	1.2	Particular emphasis in the construction of a nuclear facility needs to be related to the design assurance aspect of construction. When a component or system is passive in nature, or has aspects that are important to safety but not confirmable by testing there needs to be the additional rigor implied by the document. There are many construction activities on a nuclear site that are conventional in nature (construction of office buildings etc.). It would be useful for the scope of the document to be reflective of the different nature of a construction approach to conventional SSC's and focused primarily on the assurance of nuclear safety sensitive aspects (construction completion assurance as part of the overall design completion assurance program.
4.	2.0	Typically, the licensee uses the construction and commissioning phase of a new build project to assimilate an extensive knowledge and understanding. As written the requirement is vague and not likely doable. It may be that some of the expectations apply to various milestones and to varying degrees at each milestone. It is clear that the knowledge requirement must be met prior to the introduction of nuclear materials to the project.  It is also true that the way the project is set up will impact a number of the points. It may be more clear to set this up to clearly state what the construction program must contribute to the Design Assurance of the facility and make clear that the licensee must establish appropriate roles and responsibilities between designer, constructor and operator to provide assurance that these obligations are met.
5.	3	The document specifically makes reference to CSA N286-12. Currently operating plants have licences based on CSA N286-05. It would seem appropriate to indicate that a program is required that meets the requirements as outlined in CSA N286 or equivalent and leave the revision as a point of discussion for the issuance of a construction licence.
6.	3.1	There is a mix of construction and procurement in this section. It might add clarity to split the structure to have a section on oversight of procurement of equipment and components and reference to a program such as the old CSA N299 (or equivalent)

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		and a separate section on oversight of construction. Many of the points flow from the basic N286 framework so are perhaps redundant. On the other hand, some requirements like assurance that inspection techniques used conform to requirements such as the CQIB program, need for additional rigor in construction completion assurance where downstream commissioning testing cannot provide adequacy of design assurance are not prominently featured. At this point it is not clear (at least to me) how 'evidence of a positive safety culture' in contractor organizations would be practically measured. This area is still a developing area for licensee operating organizations.
7.	4	This section seems to outline requirements necessary to get a construction licence. It might be better to focus the section on the necessary requirements to obtain a construction licence. In doing so however, the general requirements need to be taken to a more specific level as they change through the construction period. For example bullet 2 requires a site security program be put in place. At the beginning of the construction period, the objectives of a security program are quite different than at the milestone of first nuclear material on site. The same concept is true of fire protection programming.
8.	5	The issue of qualification relates to the application of the N286 program which requires personnel to be competent. The CSA standard calls for techniques like testing, examination, demonstration of skill as a means of demonstrating competency. How the construction activity is established influences the approach to competency. Operational phase training approaches may be applied to oversight and acceptance roles, but construction work force management will in many cases need confirmation of trade skill while oversight and integration is done by others.
9.	6.1	While all the elements listed are applicable, the document does not seem to outline that the objectives and requirements change throughout the construction process which lasts several years. In the beginning the security program in more a commercial 'loss control' focus. At the milestone of nuclear material on site the focus will necessarily be different. My view is that the document should include an acknowledgment that program provisions are quite different through the construction phase. Measures absolutely necessary later in the project are not necessary at the beginning.
10.	7.1	Planning and scheduling is important to project success. however, approaches like modular construction should be constructor / licensee choices. As long as appropriate quality controls are applied, so that the outcome meets the design assurance needs, it seems to me that this is an aspect that should not be included as a regulatory requirement. Again, these are simply elements of an N286 program. The issue of drilling of concrete seems to be a detail level that is not consistent with the document. Perhaps it is more valuable to use this section to establish a clear set of regulatory hold points that set clear expectations of prerequisite activity to be completed to remove a hold point.
11.	8.2	It is not clear to me why aspects of transport to site is included in this document. Until nuclear materials are involved, transportation seems to be no different to transportation requirements for any non-nuclear project and so should be outside the scope of a nuclear construction standard.

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12.	8.3	Whether work is done on site or off site seems to be part of the thought process in this section. Where and how the work is done should be a licensee decision - as long as the method of doing the work meets codes and standards and the CSA N286 framework it should be an acceptable approach.
13.	References	A number of the references have provisions specifically targeted for operational phases of nuclear facilities and should not be directly applied to the construction phase