Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

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ORIGINAL/ORIGINAL

CMD : 22-M23

Date signed/Signé le : JUNE 1-2022

Approve Regulatory Document

Approuver le document d'application de la réglementation

REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility*, Version 2

REGDOC-1.1.2, *Guide de présentation d'une demande de permis : Permis de construction d'une installation dotée de réacteurs*, version 2

Public Meeting

Réunion publique

Scheduled for:

June 28, 2022

Prévue pour le :

28 juin 2022

Submitted by:

CNSC Staff

Soumis par :

Le personnel de la CCSN

e-doc 6662924 (WORD)
e-doc 6795206 (PDF)

Canada

Summary

This CMD pertains to a request for a decision regarding:

- draft regulatory document REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility*, Version 2

The following action is requested of the Commission:

- approve draft REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility*, Version 2

The following items are attached:

- draft REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility*, Version 2
- consultation report
- detailed comments table

Résumé

Ce document à l'intention des commissaires (CMD) concerne une demande de décision au sujet de :

- l'ébauche du document d'application de la réglementation REGDOC-1.1.2, *Guide de présentation d'une demande de permis : Permis de construction d'une installation dotée de réacteurs*, version 2

La Commission pourrait considérer prendre la mesure suivante :

- approuver l'ébauche du REGDOC-1.1.2, *Guide de présentation d'une demande de permis : Permis de construction d'une installation dotée de réacteurs*, version 2

Les pièces suivantes sont jointes :

- l'ébauche du REGDOC-1.1.2, *Guide de présentation d'une demande de permis : Permis de construction d'une installation dotée de réacteurs*, version 2
- le rapport de consultation
- le tableau des réponses aux commentaires reçus

Signed/signé le

June 1st, 2022/1er juin 2022

DBeaton

Dana Beaton

Director General

Regulatory Policy Directorate

Directrice générale de la

Direction de la politique de réglementation

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Regulatory document REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility*, Version 2 clarifies the requirements and provides guidance on submitting an application to the CNSC to obtain a licence to construct a reactor facility in Canada, and identifies the information that should be included in the application.

This document is the second version, and supersedes REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Nuclear Power Plant*, Version 1, published in August 2019. This version:

- restructures the information from Version 1 into the CNSC's Safety and Control Area framework
- enhances clarity regarding the information to be submitted for an application for a licence to construct a reactor facility
- adds clarity on applying the risk-informed, graded approach to new technologies and alternative ways to meet a requirement
- covers facility design, construction and fuel-out commissioning

It also provides information on specific topics that should be considered in planning for operation.

REGDOC-1.1.2, Version 2 will be used for proposed new reactor facilities. Once the Commission has granted a licence, the safety and control measures described in the licence application and the documents needed to support the application will form part of the licensing basis.

1 OVERVIEW

1.1 Background

1.2 Highlights

Draft REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility*, Version 2 identifies the information to be provided in support of an application for a licence to construct a reactor facility. It clarifies the requirements and provides guidance on submitting an application to the CNSC to obtain a licence.

Following the information in this regulatory document will prepare applicants to submit the appropriate information to demonstrate that they are qualified and will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

This document will be used by applicants to prepare a licence application for a licence to construct a proposed new reactor facility at a new or existing site

The applicant can apply a risk-informed approach in the development of their application, in accordance with REGDOC-1.1.5, *Supplemental Information for Small Modular Reactor Proponents*, and REGDOC-3.5.3, *Regulatory Fundamentals*. This allows for an application that reflects the technology under consideration and the associated risk profile, which is driven by project-specific characteristics.

The information provided in REGDOC-1.1.2, Version 2 does not prevent applicants from proposing alternative ways to meet a requirement. Proposed alternatives, including the use of other codes and standards, should appropriately address the complexities and hazards of the proposed activities. The applicant must demonstrate, through supporting information, that the proposed alternative demonstrates that the intent of the requirement is addressed and meets an equivalent or superior level of safety.

This application guide covers facility design, construction and fuel-out commissioning. It also provides information on specific topics that applicants should consider at the construction phase in planning for operation.

2 CONSULTATION

On October 2, 2020, a draft version of REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility*, Version 2 was issued for a 90-day public consultation period ending on January 13, 2021. This public consultation was conducted on the CNSC's e-consultation platform Let's Talk Nuclear Safety. This platform is viewable by anyone and is open for comments from anyone who registers on the platform. The CNSC does not accept anonymous comments. Commenters must provide a valid name and email to the CNSC for identification;

Only the commenter's username appears publicly. Emails were sent to the CNSC subscribers' list, and notices were posted on the CNSC website and social media.

During the consultation period, the CNSC received 88 distinct comments from 5 stakeholders:

- Bruce Power
- Canadian Nuclear Laboratories (CNL)
- Global First Power
- New Brunswick Power (NB Power)
- Ontario Power Generation (OPG)

Following the public consultation period, submissions from stakeholders were posted on Let's Talk Nuclear Safety, from January 14 to February 16, 2021, for feedback on the comments received. No additional feedback was received.

A workshop was held with the 5 commenters on November 22, 2021, to discuss the remaining requests to allow the CNSC and commenters to obtain additional clarity on the comments received during public consultation and the CNSC's draft responses. A revised draft of the REGDOC was provided to workshop participants in advance.

The outstanding subjects were systematically reviewed, as indicated in the detailed comment disposition table. Following the workshop, additional responses were provided to the participants. Participants provided no further comments.

The comments received during public consultation were consolidated into themes. The summary consultation report provides a response to each major comment and theme.

The revised draft documents (English and French), the table of all comments received, and a summary consultation report are provided with this CMD.

The following themes of comments raised during the consultation activities may be of particular interest:

Comment theme 1: Perceived overlap between material in REGDOC-1.1.2 and REGDOC-1.1.3, *Licence Application Guide: Licence to Operate a Nuclear Power Plant*

Stakeholders expressed the concern that some requirements and guidance were duplicated from REGDOC-1.1.3, *Licence Application Guide: Licence to Operate a Nuclear Power Plant*. There was also uncertainty regarding whether the expectations were the same for both licensing phases or what the differences might be.

CNSC staff response:

CNSC staff revised the text to clarify the scope of construction activities throughout the document. Staff revised the material to be as clear as possible given the breadth of potential technologies.

The intent is that REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*, and REGDOC-1.1.3, *Licence Application Guide: Licence to Operate a Nuclear Power Plant* provide a coordinated set of related documents that enable applicants to build the safety case at each stage of the reactor facility's lifecycle.

These documents are intended to provide applicants with information that "flows" through the entire lifecycle of a reactor facility - from site evaluation through site preparation, construction, operation, and eventually decommissioning.

Comment theme 2: Application of a risk-informed graded approach to innovation

Stakeholders claimed that a number of small modular reactor (SMR) designs have reduced risk profiles due to enhanced safety features, and this justifies a unique or simplified approach within the regulatory framework.

CNSC staff response:

The document has been revised for clarity, and to add more information on a risk-informed graded approach.

Given the wide range of reactor technologies under consideration by various parties, it is worth noting that these nuclear facilities have risk profiles that vary significantly, depending on the particular characteristics of the activity or facility. The regulations allow flexibility in how a proponent, applicant or licensee meets the requirements. The approach articulated in the regulatory framework allows applicants to propose alternative approaches, based on a risk-informed graded approach, as long as the applicant provides adequate justification and demonstrates how safety will be maintained for persons and the environment.

Comment theme 3: Regulatory basis for requirements on specific items

Stakeholders expressed concern that the draft REGDOC mixes statutory requirements directly derived from the *Nuclear Safety and Control Act* with more general "expectations". They asked that a number of "shall" statements be changed to "should".

CNSC staff response:

In alignment with the work conducted to address comment theme 1, CNSC staff reviewed the text to ensure that the requirements and guidance were appropriate for an application for a licence to construct a reactor facility.

Every "shall" statement within this regulatory document is linked to a regulatory requirement or an expectation that would be included within the licensing basis for the facility. The regulatory basis for "shall" statements were specified where commenters sought their specific basis.

Comment theme 4: Level of detail required for a licence to construct application

Stakeholders expressed concern that the level of detail required by the REGDOC is excessive, and that the detailed information required may not be available at the time of making the licence application.

CNSC staff response:

The licence application process is integrated and progressive for all aspects of designing, constructing and operating a reactor facility, where:

- the applicant must plan for each Safety and Control Area at every lifecycle stage of the reactor facility, and
- the plan becomes more detailed and thorough as the facility progresses through design, construction and operation.

Use of a risk-informed graded approach, based on the design of the reactor, and on the specific lifecycle phase that is being applied for, is acceptable. However, where there are design uncertainties, conservative engineering judgement is expected.

The level of detail required for a specific licence to construct application is expected to be project-specific and based on the activities covered under the licence application. Sufficient information is required for staff to be able to judge the adequacy of the design.

Comment theme 5: Management system and intelligent customer concept

Stakeholders expressed concern regarding the requirements and guidance in the management system section, with particular emphasis on the "intelligent customer" concept.

The use of 'supervising people' within the definition was noted as being out-of-step with CSA N286-12, *Management system requirements for nuclear facilities*, which uses 'overseeing' instead.

CNSC staff response:

The text was revised for clarity, and to better capture the intent. 'Informed customer' was used instead of 'intelligent customer'. The CNSC glossary's definition of informed customer was updated to use 'oversee' instead of 'supervise'.

CNSC staff believe the information within this draft REGDOC is aligned with CSA N286, and sees no conflict between these two documents. CNSC staff are aware that applicants and licensees require flexibility in organizing their management system, and believe the current text indicates what needs to be provided while maintaining flexibility.

3 IMPLEMENTATION

If published, REGDOC-1.1.2 version 2 will supersede REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Nuclear Power Plant*, Version 1, published in August 2019.

Applicants may use this regulatory document in support of an application for a licence to construct a reactor facility.

4 OVERALL CONCLUSIONS AND RECOMMENDATIONS

4.1 Overall Conclusions

Draft REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility*, Version 2 was developed through consultation with stakeholders and is essential to clarifying the CNSC's requirements and providing guidance related to regulated facilities and activities.

CNSC staff conclude REGDOC-1.1.2 is ready for final approval, by the Commission, for publication.

4.2 Overall Recommendations

CNSC staff recommend that the Commission approve REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility*, Version 2.

Canada's Nuclear Regulator

Reactor Facilities

Licence Application Guide: Licence to Construct a Reactor Facility

REGDOC-1.1.2, Version 2

June 2022

Canadian Nuclear Safety Commission
Commission canadienne de sûreté nucléaire

Canada

Licence Application Guide: Licence to Construct a Reactor Facility
Regulatory document REGDOC-1.1.2

Cat. No. NNNNN
ISBN NNNNN

Également publié en français sous le titre : Guide de présentation d'une demande de permis : Permis de construction d'une installation dotée de réacteurs

Document availability
This document can be viewed on the CNSC website. To request a copy of the document in English or French, please contact:

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Publishing history
August 2011 RD/GD-369, *Licence Application Guide: Licence to Construct a Nuclear Power Plant*
August 2019 REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Nuclear Power Plant*

Preface

This regulatory document is part of the CNSC's reactor facilities series of regulatory documents, which also covers site suitability and licence application guides for other lifecycle stages for reactor facilities. The full list of regulatory document series is included at the end of this document and can also be found on the CNSC's website.

Regulatory document REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Nuclear Reactor Facility* clarifies the requirements and provides guidance on submitting an application to the CNSC to obtain a licence to construct a reactor facility in Canada, and identifies the information that should be included in the application.

This document is the second version, and supersedes REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Nuclear Power Plant*, published in August 2019. It will be used to assess licence applications for proposed new reactor facilities. Once the Commission has granted a licence, the safety and control measures described in the licence application and the documents needed to support the application will form part of the licensing basis.

The licence application and the documents needed to support it, including the documents the application references, become the safety case for the reactor facility.

The information that will be required for the operating licence application will be added to the construction safety case. The safety case is then kept up to date over the reactor facility's lifecycle to reflect its current state and condition.

Given the wide range of reactor facilities – especially of advanced and small modular reactors (SMRs) – and given that reactor facilities have risk profiles that vary significantly, depending on the particular characteristics of the activity or facility, the applicant or licensee can apply a risk-informed approach that includes grading and alternatives in the development of their application, in accordance with REGDOC-1.1.5, *Supplemental Information for Small Modular Reactor Proponents*, and REGDOC-3.5.3, *Regulatory Fundamentals*.

For information on the implementation of regulatory documents and on the graded approach, see REGDOC-3.5.3, *Regulatory Fundamentals*.

The words "shall" and "must" are used to express requirements to be satisfied by the licensee or licence applicant. "Should" is used to express guidance or that which is advised. "May" is used to express an option or that which is advised or permissible within the limits of this regulatory document. "Can" is used to express possibility or capability.

Nothing contained in this document is to be construed as relieving any licensee from any other pertinent requirements. It is the licensee's responsibility to identify and comply with all applicable regulations and licence conditions.

Table of Contents

Licence Application Guide: Licence to Construct a Reactor Facility

1. Introduction

1.1 Purpose

This licence application guide clarifies the requirements and provides guidance on applying to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct a reactor facility.

Following the information in this regulatory document will prepare applicants to submit the appropriate information to demonstrate that they are qualified and will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

1.2 Scope

This document will be used by applicants to prepare a licence application for a licence to construct a proposed new reactor facility at a new or existing site.

Given the wide range of reactor facilities – especially of advanced and small modular reactors (SMRs) – and given that reactor facilities have risk profiles that vary significantly, the applicant or licensee can apply a risk-informed approach that includes grading and alternatives in the development of their application, in accordance with REGDOC-1.1.5, *Supplemental Information for Small Modular Reactor Proponents* [1], and REGDOC-3.5.3, *Regulatory Fundamentals* [2].

The information provided in this document does not prevent applicants from proposing alternative ways to meet a requirement. Any proposed alternative (including the use of other codes and standards) should appropriately address the complexities and hazards of the proposed activities, and the applicant must demonstrate, by providing supporting information, that the proposed alternative meets an equivalent or superior level of safety.

This application guide covers the initial application for construction of a reactor facility.

1.3 Relevant legislation

Appendix A maps a list of relevant sections from the *Nuclear Safety and Control Act* (NSCA) and the regulations made under the NSCA to the related sections of this licence application guide.

1.4 CNSC contact information

A single point of contact from the CNSC is assigned to work with every licensee or applicant. This point of contact can provide the licensee or applicant with additional information or explanation of the information contained within this document.

The applicant should contact the CNSC before submitting the licence application, and request the name and contact information of the single point of contact assigned to the licence application. For additional information, see section 2.3, Licensing process.

To contact the CNSC, refer to the CNSC's website.

2. Licensing Basis, Process and Submission

This section provides information on the licensing basis and application process, including completing and submitting the licence application.

The licence application, and the documents needed to support it, form the reference safety case for the reactor facility and thus would form part of the licensing basis. Hence, applicants should be aware that this information needs to be controlled in the same manner as other parts of the licensing basis and could be subject to CNSC compliance verification. Further information on the licensing basis is provided in REGDOC-3.5.3, *Regulatory Fundamentals* [2].

The construction safety case includes requirements for preparing the site, designing and constructing the facility, and fuel-out commissioning.

Applicants should consider that the safety case for the facility will need to be updated as part of an application for a licence to operate.

2.1 Background

Under the *Class I Nuclear Facilities Regulations*, the following activities may be licensed:
- site preparation for the purpose of constructing or operating a reactor facility
- construction of a reactor facility
- operation of a reactor facility
- decommissioning of a reactor facility
- abandonment of a reactor facility

In most cases, policies, programs, processes, procedures and other safety and control measures developed at the lifecycle phase of site preparation will continue to be used and adapted to support the construction and commissioning activities encompassed by the licence.

Note 1: Licences can be combined to permit multiple activities. For more information on combined licence applications, see section 2.5.

Note 2: This document applies to various technologies, including those having novelties, such as a liquid fuel. The phrase "to the extent practicable" is used within this document, recognizing that not all requirements are applicable to all technologies in their current state. Additionally, for a first-of-a-kind design, information may not be available or verifiable until the facility has been constructed and/or operated. Where the phrase "to the extent practicable" is used, a conservative engineering approach is expected to be demonstrated.

2.2 Licensing process

REGDOC-3.5.1, *Licensing Process for Class I Nuclear Facilities and Uranium Mines and Mills* [3], clarifies the licensing process in the context of the NSCA.

The licensing process is initiated when the applicant submits a licence application. Applicants should ensure they have included sufficiently detailed information to allow the licensing process to proceed efficiently. In addition to the information provided in this licence application guide, the CNSC may request additional information by sending supplemental, facility-specific guidance to the applicant prior to the beginning of, or during, the licensing process.

Early engagement with CNSC staff (before submission of the application) is possible and encouraged. For example:

- the applicant may submit a letter to notify the CNSC of the forthcoming application, and provide some information on the scope and schedule of the proposed project
- the vendor may request a pre-licensing vendor design review, an optional service provided by the CNSC (when requested by a vendor) that enables CNSC staff to provide feedback early in the design process based on a vendor's reactor technology; for more information, see REGDOC-1.1.5, *Supplemental Information for Small Modular Reactor Proponents* [1]

Note: The information provided in this document does not prevent applicants from proposing alternative ways to meet a requirement. However, any proposed alternative (including the use of codes and standards other than those referenced in this licence application guide) should appropriately address the complexities and hazards of the proposed activities, and the applicant must demonstrate (through supporting information and a code comparison) that the proposed alternative provides an equivalent or superior level of safety to Canadian standards.

2.3 Structuring the licence application

The application may be completed in either of Canada's official languages (English or French).

This licence application guide describes the expected safety and control measures, organized by the CNSC's safety and control area (SCA) framework. The CNSC uses SCAs as the technical topics to assess, review, verify and report on regulatory requirements and performance across all regulated facilities and activities, as follows (see appendix B):

- management system
- human performance management
- operating performance
- safety analysis
- physical design
- fitness for service
- radiation protection
- conventional health and safety
- environmental protection
- emergency management and fire protection
- waste management
- security
- safeguards and non-proliferation
- packaging and transport

Each of the 14 SCAs is further divided into specific areas, as appropriate, that cover topics addressed in a complete assessment and review. This guide identifies the specific areas relevant to an initial application for a licence to construct, recognizing that CNSC staff may identify additional areas during the application review.

The applicant may choose to organize the information in any structure. However, the applicant is encouraged to organize the licence application according to the CNSC's SCA framework so as to facilitate the CNSC's review. If the application does not follow the order and organization of

SCAs as shown above, the applicant should map the application to the CNSC's SCA framework. References to more detailed supporting documentation may be included in the application.

2.4 Completing the licence application

The applicant is responsible for ensuring that the licence application contains sufficient information to:

- demonstrate that all regulatory requirements are met
- demonstrate that the applicant is qualified to carry on the licensed activity and will make adequate provision to protect the health, safety and security of persons and the environment

The applicant may provide cross-references to other detailed sources, as appropriate.

The application should cite CNSC regulatory documents and codes and standards that the applicant intends to apply and implement (these may form part of the licensing basis). The regulatory documents and the codes and standards support the applicant's ability to implement the safety and control measures.

Applicants are encouraged to discuss with the CNSC the appropriate version (publication date and revision number) of each document (regulatory document, code or standard) planned to be applied. CNSC staff may also provide supplemental guidance on additional documents that the applicant should consider and address in the application. This pre-licensing communication is in alignment with REGDOC-3.5.1, *Licensing Process for Class I Nuclear Facilities and Uranium Mines and Mills* [3].

An application for a licence to construct a reactor facility should provide a list of the application's supporting documents and clearly identify which information has already been submitted to the CNSC. Appendix D provides a sample format for applicants to map their supporting documents to the SCA framework.

Note: If the document version in the supporting information has changed since the previous submission, the applicant must provide the CNSC with the new version number, a copy of the new version, and a summary of major changes between the new version and the version previously reviewed by CNSC staff. Appendix E provides a sample format for listing the supporting documentation.

Where a subset of the material within a supporting document addresses regulatory requirements, the relevant sections should be clearly identified.

Combined licence applications

The applicant may apply for a combined licence that permits multiple activities (for example, a combined licence to prepare the site and to construct the reactor facility). The applicant may propose any combination of activities and CNSC staff will review each combined licence application against the applicable regulatory requirements.

The applicant shall address all regulatory requirements pertaining to all stages (for example, construction and operation) covered by the combined licence application.

Applicants are strongly encouraged to discuss a combined licence application strategy with the CNSC prior to submitting an application.

Submission of licence application documentation over a defined period of time

The Commission will require a complete application, containing all information required under the NSCA and its regulations, as clarified through the regulatory framework, in order to make a decision on a licence to construct a reactor facility.

Given the extent of information that is required in an application for a licence to construct a reactor facility, an applicant may provide supporting documentation over a defined period of time. When using this approach, the applicant should provide a detailed project schedule of submissions with the initial licence application.

As described in REGDOC-3.5.1, *Licensing Process for Class I Nuclear Facilities and Uranium Mines and Mills* [3], a licence to construct enables a licensee to construct, commission and operate some components of the reactor facility (for example, security systems). Some specific commissioning activities may be allowed by the Commission through issuance of a licence to construct, to demonstrate that the facility has been constructed in accordance with the approved design, and that the systems important to safety are functioning as intended. The applicant must demonstrate that the proposed design of the facility conforms to regulatory requirements and is capable of operating safely on the designated site over its proposed lifecycle.

2.5 Submitting the licence application

The applicant should ensure that the application contains all applicable documentation, that it is dated and signed by the appropriate authority, and that all supporting documents are clearly identified and cross-referenced. If documentation is being submitted over a defined period of time, the application should clearly identify how the documents fit into the schedule of submissions.

All information submitted in support of the licence application is subject to the *Access to Information Act* and the *Privacy Act*. The CNSC licensing process should be as transparent as possible. Hence, the applicant must identify and justify any material they believe is confidential.

The licence application is subject to the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*. Therefore, the applicant should ensure that payment is enclosed. For further details, contact the CNSC Cost Recovery Group at 613-991-9791 or toll-free at 1-888-229-2672 option 2, or by email at receivables-recevables@cnsc-ccsn.gc.ca.

The applicant may choose instead to submit the licence application in printed (hard-copy) format; in this case, the applicant should submit two printed copies of the application (signed and dated) to the Commission at:

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

As required by section 27 of the *General Nuclear Safety and Control Regulations*, the applicant or licensee shall keep a record of all information relating to the licence that is submitted by the applicant or licensee to the Commission.

Prescribed information, such as details of the security program, shall be transmitted only by secure means, such as letter mail or encrypted secure memory devices. It is prohibited to submit prescribed information via unencrypted email. Guidance for the protection and transmission of prescribed information can be found in REGDOC-2.12.3, *Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material* [4]. Additional guidance, context and recommended practices on handling, submitting and transmitting assets considered security-sensitive (such as prescribed information) can be found in the Treasury Board of Canada Secretariat *Policy on Government Security* [5] and its related directives (which can be accessed through links on the same website).

3. Applicant's General Information

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

The licence application shall include the following general information to satisfy the regulations, and should also include some additional general information, as listed below. The applicant may identify appropriate information and documents as being confidential.

3.1 Identification and contact information

3.1.1 Applicant's name and business address

The applicant shall provide the applicant's name and business address.

The name should be that of the person or organization applying for the licence, as it appears on the proof of legal status documentation (such as the proof of incorporation).

The business address should be the legal, physical address of the applicant's head office, including the complete street name and number, rural route number if appropriate, city, province or territory, and postal code. A post office box number is not acceptable for a head office address.

The applicant should notify the Commission within 15 days of any changes to this information.

3.1.2 Mailing address

If the mailing address is different from the head office address, the applicant should provide the mailing address, including the complete street name and number, city, province or territory, and postal code.

If no address is provided here, any licence issued pursuant to the application will be mailed to the head office address. A post office box number is acceptable as a mailing address.

The applicant should notify the Commission within 15 days of any changes to this information.

3.1.3 Applicant authority

The applicant shall notify the Commission of the persons who have authority to act for them in their dealings with the Commission. Also, the applicant shall notify the Commission of any change in the information, within 15 days after the change occurs.

The applicant should provide a list of names, positions and contact information of all persons who are authorized by the applicant to interact with the CNSC.

Note: The applicant may request that, for security reasons, this information be subject to confidentiality.

3.1.4 Proof of legal status

Applicants should provide proof of legal status by appending proof of incorporation, corporation number or charter. When submitting an application to renew a licence to construct, a revised proof of legal status should be provided if the applicant's original organization name has changed.

If the applicant is a corporation, the application should include the following information:
- corporation's legal name
- corporation number
- date of incorporation
- registered office address (if different from the head office address)

3.1.5 Evidence that the applicant is the owner of the site or has authority from the owner of the site to carry on the activity to be licensed

The applicant shall provide evidence that the applicant is the owner of the site or has authority from the owner of the site to carry on the activity to be licensed.

3.1.6 Identification of persons responsible for management and control of the licensed activity

The application shall contain the applicant's organizational management structure insofar as it may bear on the applicant's compliance with the NSCA and the regulations made under it, including the internal allocation of functions, responsibilities and authority.

The applicant shall notify the Commission of the names and position titles of the persons who are responsible for the management and control of the licensed activity and the nuclear substances, nuclear facility, prescribed equipment or prescribed information encompassed by the licence. The applicant shall notify the Commission of any change in this information within 15 days after the change occurs.

To satisfy these requirements, the applicant should provide a summary list of all persons responsible for management and control of the licensed activity, including:
- names
- positions (job titles)
- contact information (email, telephone, facsimile)
- mailing addresses (if different from the business mailing address); include the complete street name and number, city, province or territory, and postal code

3.1.7 Billing contact person

The applicant should provide the following information for the person responsible for licence fee payments:
- name
- position
- contact information (email, telephone, facsimile)
- mailing address (if different from the business mailing address); include the complete street name and number, city, province or territory, and postal code

3.1.8 Legal signing authority

The applicant should provide the name, title and contact information (address, email address and telephone number) of the individual who is signing the application as the applicant authority.

By signing, the applicant authority is indicating that they understand that all statements and representations made in the application and on supplementary pages are binding on the applicant.

3.2 Facility and activities to be licensed

3.2.1 Licence period

The applicant should state the requested licence period (years or months).

The CNSC issues licences of varying durations. This enables regulation of reactor facilities in a risk-informed manner by adjusting the licence period in consideration of the licensee's previous performance and findings from the compliance verification activities.

3.2.2 Statement of the main purpose

The applicant shall provide:
- information about the activity to be licensed and its purpose
- a description of any nuclear facility, prescribed equipment or prescribed information to be encompassed by the licence

The application should include a general summary description of the reactor facility, the practices and safety concepts, and a comparison of the reactor facility’s design and construction with prevailing modern standards and international practices. This summary should provide an overall understanding of the reactor facility, without the need to refer to other sections in the licence application.

This information may be provided in summary format; for example, by listing the facilities, equipment or information.

3.2.3 Description of site

The application shall contain:
- a description of the site of the activity to be licensed, including the location of any exclusion zone and any structures within that zone
- plans showing the location, perimeter, areas, structures and systems of the nuclear facility

3.2.4 Description of the facility's existing licensing status, if any

If a facility on the site is currently licensed by the CNSC, or another licence application is pending, the applicant should provide a description of the licensing status.

3.2.5 Nuclear and hazardous substances

The applicant shall provide:
- the name, maximum quantity and form of any nuclear substance to be encompassed by the licence
- the name, form, characteristics and quantity of any hazardous substances that may be on the site while the activity to be licensed is carried on

The applicant should provide the scientific name of each nuclear and hazardous substance.

This information may be provided in summary format; for example, by providing a table of the nuclear and hazardous substances and the information required for each substance.

3.3 Other relevant information

3.3.1 Permits, certificates and other licences

The applicant should describe the relationship of this application to any previous licences (for example, site preparation) issued by the CNSC for this facility, including any changes to the safety case that was included in any previous licences.

The applicant should reference any other CNSC licences that control other nuclear substances or activities at the reactor facility; for example, licences for nuclear substances and radiation devices, dosimetry service, and import/export of nuclear substances.

The applicant should also provide a cross-reference to any permits or certificates issued by any regulatory body for this site. Some examples are:

- a permit issued under the *Species at Risk Act*, authorizing the person to engage in an activity affecting a wildlife species listed in the act, any part of that species' critical habitat or the residences of that species' individuals
- a permit from a provincial or territorial government for an activity that could affect an endangered or threatened plant or animal and their habitat
- a certificate issued by Fisheries and Oceans Canada authorizing an impact on fish habitat

3.3.2 Similar facilities

If applicable, the applicant should provide a list of any similar facilities owned or operated by the applicant that have been assessed and licensed by either the CNSC or any foreign national regulatory body. The application should describe the notable design differences between the proposed facility and any similar facilities (for example, those currently operating or under construction). The list should include the following information:

- facility name
- location
- description of the facility

3.3.3 Supporting information

The applicant shall include a description and the results of any tests, analyses or calculations performed to substantiate the information included in the application.

If this information supports the safety case for a facility, or substantiates the analyses for assumptions made in the safety report, it will become part of the licensing basis.

This information should be as detailed as possible. For a construction application, the applicant should include a list of any on-going test programs and/or analyses to be completed at a later date.

Some examples of supporting information are:

- the results of experimental programs, tests or analyses (for example, results of manufacturers' material tests and qualification data, and results of fuel behaviour experimental programs)
- information that has been submitted to, received from, or published by a foreign national regulatory body

4. Safety Policies, Programs, Processes, Procedures and Other Safety and Control Measures

Structure and organization of the information

This licence application guide is organized according to the CNSC's SCA framework. However, the applicant may choose to organize the information in any structure. For more information on structuring a licence application and organizing the information, see section 2.4.

Risk-informed graded approach

The CNSC's regulatory framework is primarily based on Canadian operational experience. However, the CNSC also takes into account other operating experience, such as the IAEA's international experience and the policies of other national regulators. Under the CNSC's framework, consistent with a risk-informed graded approach to regulating, applicants may propose alternative approaches to those suggested in this regulatory document. Where an alternative approach is used, the applicant should provide adequate justification. For additional information on the graded approach, see REGDOC-3.5.3, *Regulatory Fundamentals* [2].

Proponents and applicants for small modular reactors (SMRs) should refer to REGDOC-1.1.5, *Supplemental Information for Small Modular Reactor Proponents* [1].

4.1 Management system

The management system is the framework of processes, procedures and practices used to ensure that an organization can complete all tasks required to achieve its objectives, safely and consistently.

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

4.1.1 General considerations

The application should describe the management system that has been, or will be, put in place to protect health, safety and the environment, as well as a description of the organizational management structure.

4.1.2 Management system

The application should describe the management system and its implementation, including how the main features are compliant with the relevant requirements of CSA N286-12, *Management system requirements for nuclear facilities* [6], and considering the information in REGDOC-2.1.1, *Management System* [7].

The application should set out the process for establishing, implementing, assessing, and continually improving the management system in line with the principles set out in CSA N286-12 [6], with sufficient detail to ensure safety.

The application should demonstrate that:

- the management system structure is clear, with a logical hierarchy of processes and procedures
- processes are defined, with clear inputs and outputs
- roles and responsibilities are defined
- processes and procedures are clear and concise

If specific processes or implementation documents are to be developed later, the application should provide a proposed timeline and milestones for the work.

The application should describe how operational experience, from internal and external sources, will be considered and addressed.

4.1.3 Organization

To the extent practicable, the application should describe:

- the applicant's organizational structure and resources, including:
    - plans to ensure that adequate organizational structures and resources will be in place
    - organizational charts to support the governance structure
- the principles used to develop the organizational structure, such as:
    - number of layers of hierarchy
    - length of decision-making chains
    - scope of managerial control
    - use of contracted resources to supplement in-house capability

- the relationship between the applicant and any other organization with which significant interactions will occur, including:
  - information on how potential effects on nuclear safety management from each relationship will be recognized and addressed
  - confirmation that the applicant is in control of the licensed facility and activities
- the approach taken to ensure the applicant has sufficient “informed customer” capability to ensure nuclear safety and the integrity of the safety case
- how the applicant will retain sufficient in-house core capability to:
  - manage the licensed facility and activities
  - maintain subject matter expertise for nuclear safety, including “informed customer” capability, where expertise is contracted out and for procurement of items
- how the organization will ensure it has sufficient qualified workers:
  - for nuclear safety related positions
- arrangements to control organizational changes, including:
  - the resource strategy that ensures resources are available, with the skills and experience to support conduct of the licensed activity
  - identifying and mitigating over reliance on scarce or singular areas of expertise

The application should describe how organizational effectiveness and safety performance will be measured, including the use of performance indicators.

For more information on organizational responsibilities, see appendix E of REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs* [8].

Oversight of contracted work

The application should describe how the applicant will ensure that contracted work is carried out to the required level of safety and quality consistent with REGDOC-2.3.1, and CSA N286-12 [6]. Considerations include:

- ensuring that suppliers identify and categorize any deviations from specified requirements, and refer the deviations to the design authority and the authority having jurisdiction
- ensuring suitable arrangements to mitigate the risk of counterfeit, fraudulent and suspect items entering the supply chain
- detailed account of how the applicant will maintain active accountability for and control of all construction activities to ensure that they meet regulatory, technical and quality requirements

The application should describe:

- design authority for construction, and the turnover to operation (where applicable)
- organizations, other than the design authority, with responsibility for the design of specific parts of the facility
- the design authority’s relationships, including accountabilities and responsibilities between the design authority and the:
  - applicant
  - major technical support organizations
  - prime contractor and sub-contractors
  - procurement organizations
  - commissioning and operations organizations

- prerequisites for transferring the design authority to the operating organization, to ensure the recipient of the design authority has the requisite knowledge, expertise and resources to assume this responsibility

4.1.4 Configuration management and change control

The application should describe the provisions to establish and maintain configuration throughout the lifecycle of the facility. Considerations include:

- demonstrating adherence to:
    - section 7 of REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs* [8]
    - CSA N286.10, *Configuration management for high energy reactor facilities* [9]
- ensuring compatible information management technologies between participating organizations for transferring, sharing, and storing configuration information
- ensuring interface arrangements between participating organizations for reviews, approvals, releases, design changes, engineering field changes and non-conformances
- notifying the CNSC in cases where configuration changes affect or will affect the submitted design and the licensing basis
- where necessary, obtaining approvals from the authority having jurisdiction

4.1.5 Safety culture

The application should demonstrate that the applicant's approach to foster a healthy safety culture is in accordance with:

- CSA N286-12, *Management system requirements for nuclear facilities* [6]
- REGDOC-2.1.2, *Safety Culture* [10]
- REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs* [8]

4.2 Human performance management

The human performance management SCA covers activities that enable effective human performance through the development and implementation of processes that ensure that a sufficient number of personnel are in all relevant job areas and have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties.

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

4.2.1 General considerations

As it relates to the construction activities considered in the licence application, the applicant shall document the graded approach they are planning to implement:
- to comply with the requirements and guidance in the *Class I Nuclear Facilities Regulations* and REGDOC-2.2.1, *Human Factors* [11], with regard to the human performance program. The application should include a description of any substantiative efforts to date;
- to comply with the requirements and guidance in REGDOC-2.2.4, *Fitness for Duty: Managing Worker Fatigue* [12] and REGDOC-2.2.4, *Fitness for Duty Volume II: Managing Alcohol and Drug Use* [13]. The application should include a description of any substantiative efforts to date.

The application should describe the qualifications, adequate numbers, skills and competencies required by workers at the facility.

The description should include the measures to ensure a sufficient number of workers in all job areas, and that workers have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties.

The application should describe the workforce planning process - including measures for knowledge transfer - to ensure that workers are recruited and trained to fill each key role within the organization.

4.2.2 Personnel training

The application shall describe a training system that is in accordance with REGDOC-2.2.2, *Personnel Training* [14].

The applicant should describe the qualification and training requirements for personnel engaged in the design activities, and the proposed program and schedule for recruiting, training and qualifying workers for work relating to construction, commissioning, operation and maintenance.

The applicant should explain how it will ensure that personnel engaged in construction and commissioning activities have the appropriate training, qualifications and competence to perform their assigned tasks effectively and safely. For more information, see sections 3.3.3 and 8.2 of REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs* [8].

4.2.3 Personnel certification

In preparation for the authorization or certification of personnel employed in designated positions, the applicant should provide:

- a reference to or summary of the proposed management system and the concept of operation as they pertain to:
  - the roles and responsibilities of the personnel employed as part of the minimum shift complement
  - the roles and responsibilities of the personnel employed in positions immediately relevant to safety including, but not limited to, safety-sensitive and safety-critical positions
  - the extent of human intervention in operations under normal, abnormal, and emergency conditions, including the potential impact of human actions and decisions on the safety of workers, the public, and the environment
- an overview of any proposed simulator facility or system and the manner in which this simulator facility or system will be used to support personnel training
- an overview of the schedule for implementation of the programs relevant to the selection, training and qualification of reactor operators and, where applicable, control room shift supervisors.

4.2.4 Work organization and job design

The applicant should demonstrate that, to the extent practicable, the staffing levels are adequate to support the safe construction and commissioning of the reactor facility.

4.3 Operating performance

The operating performance SCA includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

4.3.1 General considerations

The application shall describe the programs and their proposed measures, policies, methods and procedures for constructing and commissioning the nuclear facility.

For activities conducted under the licence to construct, the applicant shall characterize the risks to health, safety and the environment that may be encountered by workers and the public. The applicant shall outline the strategy that the applicant will take (including development of mitigation measures) upon discovery of additional risks to the health and safety of the public that were not anticipated during the licence application process. These risks are generally similar to those encountered during construction activities at a conventional large-scale construction project. Some examples are:

- noise hazards, primarily from blasting activities and operation of heavy machinery
- dust from overburden and rock removal and movement
- chemical hazards from fuel spills, and conventional chemicals used during the construction of the structure
- mechanical hazards from excavation, earth movement, road building, and so on
- ground vibration and flying rock hazards from blasting activities
- electrical hazards from establishing construction electrical infrastructure
- transportation of building materials for construction and associated installation of internal components

For more information on how the applicant can demonstrate how they will exercise overall responsibility for construction and commission of the reactor facility, see REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs* [8]:

- section 3.1 for information about the licensee's responsibilities related to the construction of the reactor facility
- section 8.1 for information on organizational responsibilities during commissioning under the overall direction of the licensee

4.3.2 Procedures

The application should describe the provisions that will be implemented for the construction and commissioning of the reactor facility in accordance with REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs* [8]. This description should include the arrangements made to facilitate regulatory oversight of specified construction and commissioning stages, tests and hold points for specified licence activities.

The application should also describe the programs and processes in place to manage the key functions important to safety. Many of these programs and processes will begin during the construction and commissioning of the reactor facility and will be completely implemented when normal operation commences. The beginning of applicability and the point at which full implementation will occur should be indicated in the description of each process. If the applicant expects to implement a program later, in support of normal operation, they should supply sufficient information to demonstrate how the program's development and implementation is planned, including the timelines and milestones that will apply.

Construction program

The application shall:

- include information on how the applicant will exercise overall responsibility for the conduct of construction activities
- describe the construction program to be implemented

The construction program should be well planned, controlled, and properly documented, and it should cover:

- procurement, construction, fabrication, certification, identification, transportation and storage
- design and engineering, or testing of structures, systems and components (SSCs), either at the construction site or at fabrication locations remote from the site
- activities to be performed (described in manageable units)

The application should describe the processes and procedures that will be used to confirm that the reactor facility's SSCs are constructed according to their design specifications and applicable regulatory requirements, codes and standards. A list of the construction functional tests and commissioning tests that are planned for the different construction stages should also be included.

Construction of concrete structures

The application should describe the overall process to be followed to satisfactorily complete the concrete work during the construction phase, including the use of any concrete that was precast offsite. The application should provide sufficient information to permit a clear understanding of how the concrete construction will proceed, how the quality will be controlled and assured, and what objective evidence will be collected to demonstrate that the design performance specifications for the buildings and structures will be verified.

Some examples of considerations are:

- material certification, identification and control, batching, mixing of concrete constituents, curing of concrete, and construction joint preparation
- measures to control the quality of the construction, including inspections and required tests
- processes for grouting work
- control of forms in final structures, arrangements for their bracing to ensure conformance of structures with design drawings
- control of concrete temperatures and, when required, the specification of pre-heating or pre-cooling of the concrete constituents, and prevention of thermal shock
- fabrication and placing requirements for reinforcing systems of concrete containments and confinements to comply with the relevant design, and construction drawings
- installation procedure for the tendons

For more information, see:

- REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs* [8]
- CSA A23.1:19/CSA A23.2:19, *Concrete materials and methods of concrete construction / Test methods and standard practices for concrete* [15]

Construction and installation of metallic components

The application should describe the measures taken to control the quality of the construction and installation of the reactor facility's metallic components, including the inspections and tests to which they will be subjected.

The application should also provide the codes, standards and technical specifications for metallic components used during construction and the installation process. The materials used for welding, manufacturing, construction and installation should be identified and certified as per their applicable codes and standards.

The application should identify the processes and certifications for examination, shop inspection, field inspection and testing.

Commissioning program

The application should include a plan and timeline for the development, verification, validation and implementation of commissioning programs and procedures that would be completed under the licence to construct.

The application should describe how the commissioning program will confirm that equipment, SSCs, and the reactor facility, as an integrated unit, will perform and function in accordance with the design specifications and regulatory requirements.

The application should describe, in general terms, the program established for the implementation of commissioning activities up to, but not including, the first loading of fuel into the reactor. This program should confirm that the reactor facility's SSCs have been properly installed and will perform within their design specifications, and that the integrated reactor facility will perform all the necessary safety functions in accordance with design requirements. This program is particularly important for those design features that are new or first of a kind.

The application should describe the chemistry control of SSCs during construction and commissioning, in accordance with the section of REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs* [8], addressing protection of systems, structures and components important to safety. The application should describe how appropriate chemistry control and monitoring is implemented for SSCs or construction materials for which their specifications are to be established on site, or during activities carried out under the licence to construct.

The application should describe the maintenance and inspection program that will be implemented during the licence to construct to prevent deterioration of SSCs important to safety once they have been installed, constructed or commissioned and to meet the relevant requirements in REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and*

Commissioning Programs [8]. Relevant requirements within REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs* [8] include:

- section 3, addressing management and organization
- section 5.5, regarding protection of systems, structures and components important to safety
- section 8.1, on organizational responsibilities
- appendix E, describing the recommended organizational responsibilities

4.4 Safety analysis

The safety analysis SCA covers maintenance of the safety analysis that supports the overall safety case for the facility. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards.

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

4.4.1 General considerations

The application shall include a preliminary safety analysis report (PSAR) for the reactor facility. The PSAR should include a deterministic safety analysis, a probabilistic safety assessment (PSA) and a hazards analysis commensurate with the level of design. The PSAR should be developed commensurate with the level of design (for additional information, see section 4.5.1, Description of structures, systems and components). The application should demonstrate that all levels of defence in depth are addressed, and should confirm that the facility's design is capable of meeting the applicable dose acceptance criteria and safety goals.

Whenever operator action is considered, the application should demonstrate that the operators will have reliable information, sufficient time to perform the required actions, documented procedures to follow, and will have been trained.

Safety analysis is an iterative process. The safety analyses included in the PSAR should proceed in parallel with the design process, with iteration taking place between the two activities. With each iteration, the applicant should provide a higher level of detail. The applicant should outline the methodology used to advance the detailed design and the safety analyses. The scope and level of detail of the analyses should increase as the design is developed. The application should demonstrate that the design, procurement, manufacture, equipment qualification, construction, installation and commissioning processes are taken into account in the safety analyses to ensure that the design intent will be achieved in the “as built” reactor facility.

The application should describe the programs and oversight that is in place to ensure that the safety analysis is carried out by technically qualified and appropriately trained staff. The programs, oversight and results should demonstrate alignment with the management system program and be in accordance with “informed customer” principles. The information should demonstrate that all contractors and subcontractors involved in the safety analysis are qualified to carry out their respective activities.

4.4.2 Postulated initiating events

To the extent practicable and commensurate with the level of design information available at the time of a construction licence application, the safety analysis shall identify postulated initiating events (PIEs) and combinations of events using a systematic methodology (for example, failure modes and effects analysis). The scope and classification of PIEs in the application shall meet the requirements specified in:

- REGDOC-2.4.1, *Deterministic Safety Analysis* [16]
- REGDOC-2.5.2, *Design of Reactor Facilities* [17]

For more information on external events, see REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities* [18].

The information provided should demonstrate that all foreseeable events with the potential for serious consequences or with a significant frequency of occurrence are anticipated and considered.

For a site with multiple units, the application should describe how the design and safety analyses have taken into account the potential for specific hazards simultaneously affecting several units on the site.

4.4.3 Deterministic safety analysis

To the extent practicable and commensurate with the level of design information, the application shall include a deterministic safety analysis conducted in accordance with REGDOC-2.4.1, *Deterministic Safety Analysis* [16]. The level of conservatism of each deterministic safety analysis should be appropriate for the class of event analyzed and the analysis objectives.

The application should provide the dose acceptance criteria.

The application should also describe the trip coverage and trip setpoints.

The deterministic safety analysis should demonstrate that applicable dose limits are met.

For design-basis accidents (DBAs), the application should demonstrate that there is a high confidence that qualified systems (as identified in REGDOC-2.4.1 [16]) acting alone can mitigate the consequences of the event.

4.4.4 Hazard analysis

To the extent practicable and commensurate with the level of design information, the applicant shall provide a hazard analysis that has been performed in accordance with the requirements of:

- REGDOC-2.4.1, *Deterministic Safety Analysis* [16]
- REGDOC-2.4.2, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* [19]
- REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities* [18]

The application should describe the analysis of all potential hazards (internal and external), both natural and human-induced. Some examples are:

- for natural external hazards: earthquakes, droughts, floods, high winds, tornados, abnormal surges in water level and extreme meteorological conditions
- for human-induced external hazards: those that are identified in the site evaluation, such as airplane crashes and ship collisions
- for internal hazards: internal fires, internal floods, turbine missiles, onsite transportation accidents and releases of hazardous substances from onsite storage facilities

The application should describe the analysis of any potential combinations of the external hazards. It should also consider the potential interaction of external and internal hazards, such as external events that initiate internal fires or floods, or interactions that may lead to missile generation.

For a site with multiple units, the application should describe how the potential for specific hazards simultaneously affecting several units has been taken into account.

Note: External hazards are different than postulated initiating events.

4.4.5 Probabilistic safety assessment

To the extent practicable and commensurate with the level of design information, the application shall include a probabilistic safety assessment (PSA) conducted in accordance with the requirements specified in REGDOC-2.4.2, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* [19].

The application should describe how the results of the PSA have been used to identify any reactor facility vulnerabilities. With support from the PSA, the application should also:

- provide information that verifies the emergency operating procedures will be adequate during commissioning and future operation
- describe how the results of the PSA provide insights into the severe accident management program, and how these results meet the safety goals
- describe how the PSA could be used, during commissioning and future operation, to identify any systems for which design improvements or modifications to operational procedures could reduce the probabilities of severe accidents or mitigate the consequences

4.4.6 Severe accident analysis

To the extent practicable and commensurate with the level of design information, the applicant shall demonstrate that a severe accident analysis has been performed in accordance with the requirements of:

- REGDOC-2.4.1, *Deterministic Safety Analysis* [16]
- REGDOC-2.4.2, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* [19]

The applicant should also demonstrate that the results of that severe accident analysis are used in the development of an accident management program as described in REGDOC-2.3.2, *Accident Management* [20].

The content of the severe accident analyses should be consistent with the presentation of the analyses for anticipated operational occurrences and design-basis events. In addition, the application should:

- state the objective and/or the specific acceptance criteria for the severe accident analysis
- include a discussion of the additional postulated failures in the accident scenario, including the reasons for their selection
- summarize the key results of the analyses with specific acceptance criteria, and state how the acceptance criteria are met

The application should provide detailed information concerning the analysis to identify accidents that can lead to significant core damage, and/or offsite releases of radioactive material (severe accidents). In addition, the information should describe the evaluation that has been carried out on the capability of complementary reactor facility design features to meet the design criteria, in accordance with REGDOC-2.5.2, *Design of Reactor Facilities* [17].

The application should demonstrate the ability of the design to mitigate certain severe accidents. The applicant should explain the choice of the severe accidents that have been analyzed, indicating whether the choice was made on the basis of a PSA or according to another fault analysis that identifies potential vulnerabilities of the reactor facility. Additionally, the applicant should describe, explain and justify the approach taken.

Severe accidents, for those not addressed as DBAs, are typically sequences involving more than one failure (such as reactor facility blackout or design-basis events with degraded performance of a safety system). The application should describe how the analysis:

- uses best-estimate models and assumptions
- takes credit for realistic system action and performance beyond original intended functions, including systems not important to safety
- takes credit for realistic operator actions

Where this is not possible, reasonably conservative assumptions should be made. These assumptions should consider uncertainties in the understanding of the physical processes being modelled.

Where applicable, the application should include an explanation of the analysis performed for severe accident sequences and a description of the results used in developing the accident management programs and emergency preparedness planning for the reactor facility.

4.4.7 Summary of analysis

To the extent practicable and commensurate with the level of design information, the application should include information concerning the integrated review of the reactor facility design and operational safety that was carried out in order to confirm that the design meets the design objectives.

4.4.8 Event mitigation

To the extent practicable and commensurate with the level of design information, the application shall provide the results of a review of event mitigation measures in accordance with the requirements of REGDOC-2.3.2, *Accident Management* [20].

4.5 Physical design

The physical design SCA relates to activities that affect the ability of SSCs to meet and maintain their design basis, given new information arising over time and taking changes in the external environment into account.

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

4.5.1 General considerations

The application should include a general description of the overall conceptual physical design of the reactor facility, the design practices and the safety concepts. The application should also describe the approach followed for the general design of the SSCs. The design should be provided in sufficient detail that independent reviews can be performed as described in the section addressing safety assessment within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

The application should include a comparison of the reactor facility's design, construction, commissioning and operation with prevailing modern standards and international practices.

For all reactor technologies, the application should address the information in this section of this regulatory document, to the extent practicable and commensurate with the stage of the project. Any alternative approaches selected or mitigating measures applied should be identified.

The application may refer to information that was submitted previously (for example, in the application for a licence to prepare site). The set of documents that address the requirements in this section should be submitted only once (for the initial application), with few subsequent revisions.

The application should demonstrate that normal operations can be carried out safely such that radiation doses to workers and members of the public, and any planned discharges or releases of nuclear and hazardous substances from the reactor facility, will be within authorized limits.

In addition, the application should demonstrate that the radiation dose limits, release limits of nuclear and hazardous substances and safety goals are met.

The application should also describe the programs and oversight in place to ensure that the design is carried out by technically qualified and appropriately trained staff. The design work should be carried out in accordance with the management system program supporting design and in accordance with "informed customer" principles. The information should demonstrate that all contractors and subcontractors involved in the design are qualified to carry out their respective activities.

The application should provide information on the programs that will demonstrate that the design:

- considers operating experience (OPEX) and the latest research and development (R&D)
- maintains its characteristics during its lifecycle within the bounds accounted for in the design and safety analysis
- is resistant to the effects of common-cause events and, to the extent practicable, to severe accidents
- ensures the reactor facility will remain reliable and robust
- facilitates effective maintenance, operation and decommissioning

Description of structures, systems and components

For each SSC, the application should describe the characteristics, major components and design basis requirements (such as the functional and performance requirements associated with the definition of design basis), commensurate with the safety classification, including the following information:

- objective of the system and how it relates to the entire reactor facility
- design description of the system and its main components with their configuration and their modes of operation, including:
  - functional requirements (for example, postulated demands and required performance for all facility states)
  - the design-basis events that contribute to the determination of the system design requirements, and which design limits are determined by which events
  - interfaces with other systems
  - measures taken to minimize the generation of nuclear and hazardous waste through design
  - any other specific requirements imposed by applicable regulations, codes and standards
- supporting design documentation and any related documents, such as design requirements of the system
- cross-cutting programs, such as:
  - safety and pressure boundary code classifications
  - quality assurance
  - seismic and equipment requirements
  - human factors requirements
  - requirements developed to ensure consistency with other systems and the safety analysis
  - the design reliability targets for systems and main components
  - any requirements resulting from operational feedback
- detailed elements of system design, including, as appropriate:
  - design flowsheets for fluid systems
  - single line diagrams for electrical, and instrumentation and control systems
  - functional block diagrams for logic systems
  - physical location and isometric drawings
  - system boundaries as a function of mode of operation
  - containment boundaries including isolation requirements
  - code classification and classification boundaries for pressure-retaining systems and components
  - seismic categories and seismic boundaries and their interfaces with support systems providing services, such as electric, pneumatic or hydraulic power, cooling, lubrication and sampling systems
  - chemical control specifications
- operational aspects, such as:
  - operation of the system and its expected performance
  - interdependence with the operation of other systems
  - requirements for technical specifications regarding system operability
  - system testing for availability, reliability and capability, including online health monitoring, reporting and trending

- commissioning testing requirements to:
    - demonstrate to the extent practicable that the SSCs meet their performance requirements in all operational states and accident conditions credited in the safety analysis (particularly important for those design features which are new or first of a kind)
    - verify that the SSCs have been correctly installed/constructed

4.5.2 Site characterization

The application should refer to, or summarize, the information previously submitted in any relevant environmental review or licensing documentation, such as impact assessments and any previous licence application (such as licence to prepare site).

The results of site characterization are used in facility design and supporting safety analysis. The application should confirm the site characteristics (especially for external events) and assess the effects of any updated information.

For additional information on site characterization and exclusion zone authority and control, see REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities* [18] and REGDOC-2.5.2, *Design of Reactor Facilities* [17].

4.5.3 Design principles and requirements

To the extent practicable and commensurate with the level of design information available, the application should describe the design principles and requirements that cover the processes for the overall design of the facility, and the operation and interaction of all of the SSCs to be addressed. To ensure that the reactor facility will be reliable, robust and maintainable, the applicant should ensure that the design:

- conforms to applicable codes and standards
- considers OPEX and the latest research and development (R&D)
- is resistant to the effects of common-cause events and, to the extent practicable, to severe accidents

When aspects of the design are based on conservative deterministic principles, such as those outlined in international codes and standards or in regulatory documents, the application should describe the use of such principles. If the design of the reactor facility does not fully comply with a specific deterministic principle in a regulatory document, the applicant should demonstrate that the overall level of safety is not impaired.

The application should identify the criteria used for determining the level of acceptable risk, and should show that the criteria meet general safety objectives and concepts in accordance with the safety objectives and concepts within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

The application should describe the decision-making methodology (for example, cost/benefit, best available technology, etc.) that was used to select the design option.

The application shall describe the integrated aging management program that meets the requirements of:

- REGDOC-2.6.3, *Aging Management* [21]
- The section on aging and wear within REGDOC-2.5.2, *Design of Reactor Facilities: Nuclear Power Plants* [17]

Safety objectives and goals

The safety objectives and goals are described in detail in REGDOC-2.5.2, *Design of Reactor Facilities* [17].

Where applicable, the application should describe how the safety objectives and goals have been met in the design of SSCs, and should demonstrate that these objectives and goals are in accordance with the sections addressing the general nuclear safety objective and operational limits and conditions within REGDOC-2.5.2 [17], including the actions and supporting evidence the applicant has undertaken to confirm this.

Where there is some duplication of information requested in various sections, the application may include cross-references to detailed information in other sections as appropriate.

Design authority

The application should demonstrate that the design authority, the entity with overall responsibility for the design, is established in accordance with the section addressing design authority within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

If the design authority has been transferred from another organization, the applicant should provide the formal relationships (including roles and responsibilities) and the prerequisites that had to be met prior to the transfer.

Applicable regulations, codes and standards

The application should demonstrate to the extent practicable that the design envelope of the reactor facility is established in accordance with the section addressing plant design envelope within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

The application should include declarations of the design's compliance with the codes and standards used. The applicant should evaluate these documents for their applicability, sufficiency and adequacy, and provide the results in the application. If necessary, the standards used should be supplemented with additional requirements that should also be identified in the application.

The applicant should provide an assessment, such as a gap analysis, if the codes and standards differ from those used in Canada. The application should include information pertaining to cases where requirements contained in any of the applicable regulations or codes and standards are not met.

The application should include an assessment of the safety significance of any deviations from applicable codes and standards. A separate and complete justification should be provided for each deviation. This justification should include all information necessary to assure the CNSC that any deviations will not negatively affect the facility's overall level of safety. This justification should be included wherever applicable in the licence application or in documents referenced in the licence application.

Safety assessment and engineering evaluation

The applicant should demonstrate that a systematic process, using proven engineering practices, has been applied throughout the design activities to ensure that the design meets all relevant safety requirements in accordance with the section addressing safety assessment within REGDOC-2.5.2, *Design of Reactor Facilities* [17]. For systems important to safety, this includes:

- failure modes and effects analysis
- assessment of vulnerability to single failures, crosslinks, common cause and common mode failures
- assessment of system reliability and equipment function in the anticipated environment
- as applicable, assessment of seismic events

The applicant should ensure that the reactor facility design meets all other applicable safety and regulatory requirements.

The application should summarize compliance with applicable design requirements (with reference to the original reports), including technical information on:

- material strength
- overpressure protection
- corrosion resistance
- environmental qualification
- reliability assessment
- resistance to electromagnetic and radiofrequency interference
- verification and validation of software

This section should provide the following information for each system that is credited, or that supports a credited system, in the safety analysis:

- an assessment of the functional capability of the system that is directly credited in the safety analysis, including but not limited to:
    - timing of system operation
    - minimum system performance envelope to meet safety analysis assumptions
    - ability of the system to perform over the lifetime of the reactor facility
    - ability of the system to perform in any abnormal environmental conditions in accident scenarios for which the system is credited
    - demonstration that the physical separation, the electrical and/or fluid isolation devices and the environmental qualification requirements (or any other special protective measures) provide sufficient capacity to deliver the credited functions reliably

Identification of facility states and operational configurations

The application should identify all facility states and operational configurations in accordance with:

- REGDOC-2.4.1, *Deterministic Safety Analysis* [16]
- the section addressing plant states within REGDOC-2.5.2, *Design of Reactor Facilities* [17]

For operational states (normal operation and anticipated operational occurrences (AOOs)), the information should cover configurations such as start-up, normal power operation, shutting down, shutdown, refuelling and any other normal operating configuration. The application should identify the key parameters and unique characteristics of each operational configuration, including the specific design provision for maintaining the configuration. The application should also provide the permissible periods of operation at different conditions (for example, power level) in the event of a deviation from normal operating conditions.

Design envelope

The application should include a cross-reference to the design envelope for the reactor facility, which includes all facility states and configurations. The applicant should demonstrate that the design authority has established the design envelope.

Defence in depth

The applicant should describe the approach taken to incorporate the defence-in-depth concept into the design of the reactor facility. The design approach adopted should ensure that multiple and (to the extent practicable) independent levels and barriers for defence are present to provide protection against AOOs and accidents including DBA and severe accidents. For more information, see the sections addressing defence in depth and application of defence in depth within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

The application should describe the selection of the main barriers, with particular emphasis placed on SSCs important to safety. The application should describe any proposed operator actions to mitigate the consequences of events and to assist in the performance of important safety functions.

Safety functions

The application should describe how the fundamental safety functions have been incorporated into the design of the reactor facility, in accordance with the section addressing safety functions within REGDOC-2.5.2, *Design of Reactor Facilities* [17]. The application should provide information on the SSCs used to perform necessary safety functions at various time intervals following a PIE.

The application should also identify and provide a description of any additional safety functions, for example, heat removal from irradiated fuel in fuel handling and storage systems.

Safety classification of structures, systems and components

The application should describe the approach adopted in the design for the safety classification of the SSCs. The approach should be in accordance with the section addressing safety classification of SSCs within REGDOC-2.5.2, *Design of Reactor Facilities* [17]. It should include criteria for deciding on the appropriate design requirements for each class, such as:

- appropriate codes and standards to be used in the design, manufacturing, construction, testing and inspection of individual SSCs
- in accordance with the appropriate sections of REGDOC-2.5.2 [17]:
    - system-related characteristics, such as the degree of redundancy, diversity, separation, and reliability (section addressing design for reliability)
    - environmental qualification (section addressing equipment environmental qualification)
    - seismic qualification (section addressing seismic qualification and design)
- availability requirements for particular SSCs for on demand duty and for reliability for the prescribed mission time
- quality assurance requirements

Design for reliability

The application should demonstrate to the extent practicable the basis for any reliability targets that meet the requirements in the section addressing design for reliability within REGDOC-2.5.2, *Design of Reactor Facilities* [17] and REGDOC-2.6.1, *Reliability Programs for Nuclear Power Plants* [21].

The applicant should demonstrate that all SSCs important to safety have been designed with sufficient quality and reliability to meet the design limits. The applicant should provide a reliability analysis for each of these SSCs. In accordance with the appropriate sections of REGDOC-2.5.2, *Design of Reactor Facilities* [17], the application should include considerations of:

- common-cause failures
- single-failure criterion
- fail-safe design
- allowance for equipment outages
- shared systems

Human factors

The application should describe how the facility design accounts for human factors. It should describe the systematic process that has been followed, for all systems, to incorporate consideration of human factors into the specification, definition and analysis of requirements; design activities; and verification and validation activities.

The application should describe the interfaces of human factors in design with other areas (for example, as inputs to the development of operating and other procedures and training). The application should also describe the considerations of human factors that apply to the design of specific SSCs, including:

- human-machine interfaces for all facility states
- instrumentation, displays and alarms provided to monitor system operations
- physical location, accessibility and usability of equipment that is operated, tested, maintained or monitored
- physical interlocks, and indication of bypassed or inoperable status

The application should include a list of human factors analyses and activities that were used in developing the design. The applicant should demonstrate that human factors engineering and human-machine interface considerations have been applied to all operational states and accident conditions, and for all locations within the reactor facility where such interactions are anticipated.

The applicant should also provide a human factors engineering program plan.

For additional information on human factors design requirements, refer to:

- REGDOC-2.5.1, *General Design Considerations: Human Factors* [22]
- CSA N290.12-14, *Human factors in design for nuclear power plants* [23]
- the section addressing human factors within REGDOC-2.5.2, *Design of Reactor Facilities* [17]

Radiation protection

The application shall include a description of the design approach adopted that demonstrates the facility design meets the requirements of the *Radiation Protection Regulations* and the radiation protection objectives and dose acceptance criteria in accordance with the sections addressing the radiation protection objective and dose acceptance criteria within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

The information submitted shall demonstrate that, over the lifecycle of the nuclear facility and in all operational states, radiation doses within the reactor facility or any planned release of radioactive material are kept below regulatory limits and are as low as reasonably achievable (ALARA).

Robustness against malevolent acts

The information submitted should demonstrate that the design includes considerations of both physical protection concerns and transportation routes, in accordance with the requirements of:

- the *Nuclear Security Regulations*
- REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities* [18]
- the section addressing robustness against malevolent acts within REGDOC-2.5.2, *Design of Reactor Facilities* [17]

The application should describe both the general design approach and the approach and provisions followed to ensure the physical protection of the reactor facility (including control areas) against internal and external sabotage. These measures should take into account the selection of specific materials, the physical separation of redundant systems, the performance requirements of the equipment, and the use of barriers to segregate redundant safety trains.

The description of the design approach should include:

- rules followed to establish the scope of threats
- justification for the specification of vital areas and the anticipated loads (for example., impact forces, blast pressure waves, internal induced vibrations, fires and missiles) on SSCs and buildings
- methodology used for assessing the vulnerability of the reactor facility, along with the measures selected to address these vulnerabilities and their consequences

The application should also describe the provisions for protecting the capability of:

- monitoring and control of reactor facility parameters
- emergency management and response
- mitigation and recovery measures to ensure the safety of workers and the public

Note: Applicant submission and resultant review correspondence related to this topic is considered to be prescribed information under the NSCA and must be submitted in a secure manner. Guidance for the protection and transmission of prescribed information can be found in REGDOC-2.12.3, *Security of Nuclear Substances: Sealed Sources and Category I, II and II Nuclear Material* [4]. Additional guidance, context and recommended practices on handling, submitting and transmitting assets considered security-sensitive (such as prescribed information) can be found in the Treasury Board of Canada Secretariat *Policy on Government Security* [5] and its related directives (which can be accessed through links on the same website).

Safeguards in the design and design process

With respect to the design and design process, the information submitted should demonstrate that the design and design process comply with the obligations arising from the safeguards agreement between Canada and the International Atomic Energy Agency (IAEA). For additional information on safeguards, see section 4.13.

Design changes

The application should describe the provisions being established for control and implementation of design modifications such that the reactor facility is maintained and modified within the limits prescribed by the design, analysis and (once established) licensing basis.

The application should also describe the processes for maintaining the design basis, taking into account new information, operating experience, safety analyses, resolution of safety issues or correction of deficiencies.

The application should describe how design changes are assessed, addressed and accurately reflected in the safety analyses or analysis of record prior to implementation.

Feedback into the design and design process from operating experience and safety research

The application should describe how lessons learned from the operation of other facilities or results of new research have been incorporated into the submitted reactor facility design in accordance with the section addressing operational experience and safety research within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

With respect to the design and design process, the application should describe how feedback from operating experience (OPEX) and safety research takes into account:

- changes in design due to recent advances in material properties
- improved methods of construction and fabrication
- considerations related to improvement in reliability and in the operability and maintainability of the reactor facility
- considerations on the current safety approach
- the understanding of important phenomena governing behaviour of the reactor facility
- methods and tools used in design and analysis

Operability and maintainability

The application should describe how, in general, the design process and its outputs support the design for system and equipment operability and maintainability in accordance with the sections addressing normal operation and in-service testing, maintenance, repair, inspection and monitoring within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

Control of foreign material

The application should demonstrate that the design provides for the detection, exclusion and removal of all foreign material and corrosion products that may have an effect on safety.

Other safety functions

The application should specify, describe and explain the appropriateness of any other safety requirements or criteria that have been respected in the design to reduce the effect of failures and enhance the safety of the design. The description should include, but not be limited to:

- adequate safety margins
- simplified design
- passive safety features
- gradually responding systems
- fault-tolerant reactor facility and systems
- operator-friendly systems
- leak-before-break concepts
- fail-safe design

Decommissioning

The application shall describe considerations and design provisions that will facilitate future reactor facility decommissioning and dismantling activities.

The application should also describe considerations and provisions for storage of radioactive waste after the end of commercial operation.

4.5.4 Facility design

The application shall describe the processes that pertain to the overall adequacy of the facility design, including layout of the facility itself.

Basic technical characteristics

The application should include a description (in a table, if appropriate) of the principal features and specifications of the reactor facility, for example:

- number of reactor units
- type of reactor facility and its main features and characteristics
- safety systems
- type of nuclear steam supply system
- type of containment structure
- thermal power levels to be reached in the core
- corresponding net electrical power output for each thermal power level
- any other characteristics necessary for understanding the main technological processes of the design

In cases where the reactor facility design is similar to earlier designs licensed by the CNSC, the applicant should provide a comparison that identifies and justifies the main modifications and improvements that have been incorporated into the submitted design.

Layout of main systems and equipment in the facility

The application should include basic technical and schematic drawings of the main facility SSCs, including:

- details of the physical and geographical location of the reactor facility
- connections with the electrical grid
- means of access to the site by rail, road and water

This information should be sufficient for the CNSC to verify that:

- the facility design is in accordance with the sections addressing the exclusion zone and facility layout within REGDOC-2.5.2, *Design of Reactor Facilities* [17]
- the reactor facility design includes adequate provision for an appropriate exclusion zone

The information submitted should demonstrate that:

- the facility layout takes into account PIEs to enhance the protection of SSCs important to safety
- in accordance with the section addressing radiation protection within REGDOC-2.5.2 [17], suitable provision has been made in the design and layout of the reactor facility to reduce doses and radioactive releases from all sources

The application should also include general layout drawings of the entire reactor facility, accompanied by a brief description of the main systems and equipment, and their individual purposes and interactions. Information on reactor facility layout that contains security-related information should be submitted in a secure manner.

The application should include references to other sections that provide more detailed descriptions of SSCs. The application should describe the main interfaces and boundaries between onsite equipment and systems provided by different design organizations, including the interfaces with equipment and systems external to the reactor facility (for example, the electrical grid). The description should provide sufficient detail to reveal how the reactor facility operation will be coordinated.

The application should refer to the confidential information on the provision made for the physical protection of the reactor facility.

4.5.5 Structure design

The application shall present relevant information on the design of the site layout and on civil engineering works and structures associated with the nuclear facility, with sufficient detail for CNSC staff to verify that the design is in accordance with the sections addressing civil structure and strength of the containment structure within REGDOC-2.5.2, *Design of Reactor Facilities* [17]. To the extent practicable and commensurate with the level of design information, the application should describe:

- the design and analysis procedures, the assumed boundary conditions and the computer codes used in the analysis; site and reactor facility layout information should include the main building and structures (including the foundation), sources of cooling water, grid connection, and access to all essential services required for both normal and emergency operation

- the design principles, design basis requirements and criteria, and applicable codes and standards used in the design:
  - the application should demonstrate that the safety margins are sufficient for the buildings and structures important to safety (for example, seismic design and robustness against internal and external events)
  - the application should clearly state and justify any deviation from applicable codes and standards or from other design requirements
- the safety classification for each building containing equipment or used for operations important to safety; the classification should be commensurate with the classification of the systems and equipment that it contains or the operations it is used for
- the seismic classification for each structure and building:
  - the descriptions provided should include the extent to which various load combinations have been considered to confirm that the to meet its safety functions
  - if a structure performs a function other than structural support (for example, radiation shielding, separation barrier, and confinement or containment), the application should specify the additional requirements for this function and should reference them in other relevant sections of the application
- the range of anticipated structural loadings and performance requirements, including design consideration for specific hazards during operation, and for any design considerations or mitigation measures in place to deal with beyond-design-basis accidents

The description of structures that house nuclear material (such as new and spent fuel or tritiated light or heavy water) should include the design considerations (for example, applied loads, codes and standards, analytical tools and material properties), the structural stability, the relative displacements, and the means of protection against internal and external events that were considered.

The application should present design information that is sufficient for the proper and safe construction of all buildings, civil infrastructure and civil site works. For civil construction, "sufficient information" would typically include drawings, calculations, and specifications equivalent to those required for obtaining a provincial building permit. However, for a reactor facility, this design information is based on the requirements from nuclear codes and standards (for example, the CSA N291, N289 and N287 series of standards).

The application should address the safety requirements for the containment building or system, including, for example, its structural strength, leak tightness, and resistance to steady-state and transient loads (such as those arising from pressure, temperature, radiation and mechanical effects that could be caused by internal and external events). The application should also include the main design features of the structures in place to comply with these safety requirements.

The application should provide details on the safety requirements and design features for all structures that support confinement and containment functions, such as reactor vault structures, shielding doors, airlocks and access control and facilities, in accordance with the section addressing containment within REGDOC-2.5.2, *Design of Reactor Facilities* [17]. The application should include the coupling between the internal structures and the main confinement or containment structure that affects the transmission of loads from external events to the internal structures.

The description of design provisions should also cover details such as:
- identification of the applicable design guides and design requirements
- descriptions of structures, including:
  - base slab and sub-base
  - containment wall design
  - containment wall openings and penetrations
  - pre-stressing system
  - containment liner and its attachment method

The application should describe the confinement, including the analytical models and methods used and the results of the design evaluation of the containment's ultimate pressure capacity with the corresponding acceptance criteria. For designs incorporating a liner plate, the application should provide the analysis and design procedures for the liner plate and its anchorage.

4.5.6 System design

The applicant should present relevant information for the system description, pressure-retaining SSCs, equipment environmental qualification, electromagnetic interference, seismic qualification, and fire safety/fire protection.

System description

The applicant should provide, to the extent practicable, the characteristics and major components of the system and its design basis requirements (for example, the functional and performance requirements associated with the definition of design basis).

Pressure- or fluid-retaining structures, systems and components

The application should describe the basis for the design of the pressure- or fluid-retaining SSCs and their supports, in accordance with the section addressing pressure-retaining structures, systems and components within REGDOC-2.5.2, *Design of Reactor Facilities* [17]. The application should also describe the pressure boundary standards and codes (and their editions / effective dates). It should also describe the overall pressure boundary program, including its implementation processes and procedures. In addition, the application should describe the service agreement with a recognized authorized inspection agency and the related pressure boundary quality assurance program.

Equipment qualification

The applicant should provide detailed processes and specifications for an equipment qualification program. The program should identify equipment service conditions. The application should demonstrate that equipment can perform its intended safety functions under the environmental conditions defined for all facility states in which it is credited.

The application should include the designated functional requirements, the definition of the applicable environmental parameters, and the documentation of the qualification process used to demonstrate that the required equipment is capable of meeting the requirements in accordance with the sections addressing design documentation, plant states, design rules and limits, equipment environmental qualification and in-service testing, maintenance, repair, inspection and monitoring within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

For SSCs important to safety, the application should include a description of how aging effects due to service life are taken into account.

Electromagnetic interference

The applicant should demonstrate that instrumentation and electrical equipment of SSCs important to safety are protected from electromagnetic interference (EMI)-induced faults for all plant states in which they are credited.

The information submitted should meet the requirements in accordance with the section addressing instrumentation and control within REGDOC-2.5.2, *Design of Reactor Facilities* [17] and also demonstrate the capability, as specified in the design, of instrumentation and electrical equipment to function within the applied electromagnetic environment of the reactor facility in different plant states, and without introducing significant electromagnetic disturbances to other equipment within the reactor facility.

The application should include the layout strategies for grounding and shielding, and should also provide EMI-qualified device handling and storage requirements.

Seismic qualification

The application should describe how the reactor facility design protects SSCs (including building structures) from earthquake damage, and how the approach is in accordance with the section addressing seismic qualification and design within REGDOC-2.5.2, *Design of Reactor Facilities* [17]. The applicant should ensure there is instrumentation available to monitor seismic activity at the site for the lifecycle of the reactor facility.

SSCs important to safety should be designed to withstand a design-basis earthquake (DBE) event. For a beyond-design-basis earthquake, the applicant should demonstrate that there is a high confidence of low probability of failure of the SSCs that are credited to function during and after the event.

4.5.7 Fire safety and fire protection system

The application should describe how the reactor facility's design provisions will address prevention of, protection from, control of, mitigation of, response to, and recovery from fires (including explosions) in order to protect the SSCs, persons and the environment.

The application should include an independent third-party review of the design, assessing compliance against the applicable fire codes and standards used in the design for protection from fires and explosions.

4.5.8 Reactor and reactor coolant system

The application should demonstrate that the reactor and reactor coolant system meet the requirements in the sections addressing reactor core, reactor coolant system and means of shutdown within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

The applicant should provide relevant information concerning the reactor, including a summary description of:

- mechanical, nuclear, thermal and hydraulic behaviour of the designs of the various reactor components
- fuel, reactor internals, and reactivity control systems
- related instrumentation and control systems in place to demonstrate the capability of the reactor to perform its design safety functions in all operational states throughout its design life

The applicant should ensure that the nuclear criticality safety program meets the requirements in REGDOC-2.4.3, *Nuclear Criticality Safety* [24] and the section addressing fuel handling and storage within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

Design of fuel system

The applicant should provide the following information concerning the thermal, mechanical, thermal-hydraulic and material design of all fuel systems and components, including a description of the fuel manufacturing and a summary of the in-core fuel management:

- the design documents of all fuel systems to be used, including the fuel design drawings
- the fuel design basis requirements
- evaluations of the fuel design
- a description of the methods and computer codes used to assess the fuel behaviour under normal and accident conditions
- testing, inspection and surveillance plans
- the manufacturing process

Design of the reactor internals

The application should describe the design of the reactor internals and their design basis requirements, for example:

- structures into which the fuel has been assembled
- as applicable, related components required for fuel positioning
- all supporting elements internal to the reactor, including any separate provisions for moderation and fuel location

The information provided should link to and complement other sections that cover related aspects of the reactor fuel and its handling and storage, such as (as applicable to the technology being proposed):

- physical and chemical properties of the fuel components including:
  - thermalhydraulic, structural and mechanical aspects
  - the expected response to static and dynamic mechanical loads and their behaviour
  - a description of the effects of irradiation on the ability of the reactor internals to perform their safety functions adequately over the design life of the reactor facility
- any significant sub-system components, including any separate provisions for moderation and fuel location (corresponding design drawings should be provided)
- consideration of service effects on the performance of safety functions, including surveillance and/or inspection programs for reactor internals to monitor the effects of irradiation and aging on them

- program to monitor the behaviour and performance of the core, which should include provisions to monitor the neutronics, dimensions, and temperatures of the core

Nuclear design and core nuclear performance

To the extent practicable, the application should describe how the design meets the design basis requirements for:

- nuclear design of the fuel
- reactivity control systems (including nuclear and reactivity control limits such as excess reactivity, fuel burn-up, reactivity feedbacks)
- core design lifetime
- fuel replacement strategies
- reactivity coefficients
- stability criteria
- maximum controlled reactivity insertion and removal rates
- control of power distributions
- shutdown margins
- rod speeds and stuck rod criteria
- chemical and mechanical shim control
- neutron poison requirements
- all shutdown provisions

The description should also include any of the following areas of the design if applicable:

- fuel enrichment distributions
- burnable poison distributions
- physical features of the lattice or assemblies relevant to nuclear design parameters
- delayed neutron fractions and neutron lifetimes
- core lifetime and burn-up
- plutonium build-up
- soluble poison insertion rates
- xenon burnout or any other transient requirements

Further detailed information should be provided on the following topics, as appropriate:

- power distributions
- reactivity coefficients
- reactivity control requirements
- reactivity devices
- criticality during refuelling
- reactor core stability, irradiation issues
- analytical methods used (with verification and validation information and uncertainties)
- testing and inspection plans
- operational limits and conditions

Core thermalhydraulic design

To the extent practicable, the applicant should provide information concerning the reactor and reactor coolant system thermalhydraulic design, including:

- design basis requirements, the thermal and hydraulic design for the reactor core and attendant structures, and the interface requirements for the thermal and hydraulic design of the associated systems
- analytical tools, methods and computer codes (with codes for verification, and validation information and uncertainties) used to calculate thermal and hydraulic parameters
- flow, pressure and temperature distributions, and the specification of their limiting values and a comparison with design limits
- justification for the thermalhydraulic stability of the core; for example, stability in forced or natural circulation flow against:
  - neutronic/thermalhydraulic feedback
  - flow oscillations

Reactivity control systems

The design of the reactivity control systems should provide the means for detecting levels and distributions of neutron flux. To the extent practicable, information provided on the reactivity control systems should include, but not be limited to:

- design basis requirements for the systems
- demonstration that the reactivity control systems, including any essential ancillary equipment, are designed to provide the required functional performance and are properly isolated from other equipment
- description of the qualification and commissioning tests that have been carried out, in order to ensure that the equipment and system performance comply with the design requirements and meet the claims for their performance made in the safety analysis
- description on how diversity and physical separation have been achieved
- description of the rate of reactivity insertion and the depth of each reactivity control system in accordance with the section addressing means of shutdown within REGDOC-2.5.2, *Design of Reactor Facilities* [17]

Taken together, the SSCs important to safety instrumentation and control systems and the reactivity control systems should meet the expectations for shutdown means, in accordance with the section addressing means of shutdown within REGDOC-2.5.2 [17].

Reactor materials

The application should describe the materials used for the components of the reactor (examples include materials for the reactor coolant system pressure boundary, the materials for the core support function and the materials for in-core components such as reactivity control mechanisms and instrumentation). The application should include information on the material specifications, including:

- chemical, physical and mechanical properties
- resistance to corrosion
- dimensional stability, strength, toughness, hardness and crack tolerance
- where important, microstructure and material fabrication details

The application should describe the properties and required performance of seals, gaskets and fasteners in the primary pressure boundary.

The application should describe a material surveillance program that will address potential material degradation for all components, particularly for components operated in high radiation fields, in order to determine the metallurgical or other degradation effects of factors such as irradiation, stress corrosion cracking, flow-accelerated corrosion, thermal embrittlement, vibration fatigue, and other aging mechanisms.

The application should describe how neutronic properties of reactivity control mechanism materials are addressed in the nuclear design and core nuclear performance section.

Design of the reactor coolant system and reactor auxiliary system

To the extent practicable, the application should provide the design basis requirements for the reactor coolant system and its major components. The application should describe the system design performance and features to ensure that its various components and its interfacing subsystems meet the safety requirements for design.

The application should demonstrate that the reactor coolant SSCs are designed, manufactured and installed in a manner to allow periodic inspections and tests during their operating lifetime.

Where applicable, the information provided should cover:
- reactor coolant pumps
- steam generators or boilers
- depressurization system
- reactor coolant system piping
- main steamline isolation system
- isolation cooling system for the reactor core
- main steamline and feedwater piping
- pressurizer
- pressure-relief discharge system
- provisions for main and emergency cooling
- residual heat removal system and its components, such as pumps and valves
- supports for piping, vessels and components

The application should indicate the location of specified inspection information in the design documentation, including the volumetric or visual examination and testing.

The application should describe any additional systems associated with the reactor that are not described elsewhere in the application.

Integrity of the reactor coolant system pressure or fluid boundary

The application should include the results of the analytical and numerical stress evaluations, and of the engineering mechanics and fracture mechanics studies for all components comprising the reactor coolant system pressure or fluid boundary.

The application should take into account the entire range of operating and postulated accident conditions in all operating and shutdown states. The description should directly refer to the detailed stress analyses for each of the major components, to permit further evaluations to be made, if necessary.

The information should be detailed enough to demonstrate that the materials, fabrication methods, inspection techniques, loading conditions and load combinations used conform to all applicable regulations, codes and standards. The pressure or fluid boundary materials, the pressure-temperature or fluid-temperature limits and the integrity of the reactor pressure or fluid boundary – including embrittlement considerations – should all be taken into account in this information.

4.5.9 Safety systems and safety support systems

The information submitted in the application should demonstrate that the safety systems (as defined in REGDOC-2.5.2, *Design of Reactor Facilities* [17]) ensure the safe shutdown of the reactor or the residual heat removal from the core, or limit the consequences of AOOs and DBAs. The application should describe how the safety support system supports the operation of one or more safety systems.

Means of shutdown

The application should describe the means of reactor shutdown, reducing reactor power to a low value, and maintaining that power for the required duration, when the reactor power control system and the inherent characteristics are insufficient or incapable of maintaining reactor power within the requirements of the SOE.

Systems and components supporting emergency core cooling

The application should describe the systems and components that support the emergency core cooling. Systems that supply electrical power or cooling water to equipment used in the operation of emergency core cooling should be considered as a safety support system.

The applicant should ensure that, if injection of emergency coolant is required, an operator cannot easily prevent the injection from taking place.

The application should demonstrate that reactor facility safety would not be affected even if all or part of emergency core cooling was operated inadvertently.

Systems and components supporting emergency heat removal

The application should describe the systems and components that support the emergency heat removal, which provide for removal of residual heat in order to meet fuel design limits and reactor coolant boundary condition limits in accordance with the section addressing emergency heat removal system within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

If emergency heat removal is required to mitigate the consequences of a DBA, then the emergency heat removal system should be designed as a safety system.

The applicant should demonstrate that, during DECs, the emergency heat removal systems and components will function as required.

Systems, structures and components supporting containment and means of confinement

Note: Much of the information below applies to containment structures. Some reactor designs may use the containment capabilities of other components, such as fuel. The applicant or licensee may propose alternative approaches. For information on alternative approaches, see REGDOC-3.5.3, *Regulatory Fundamentals* [2].

The application should describe the SSCs supporting containment and means of confinement that are in place to minimize the release of radioactive materials to the environment during operational states and DBAs. The containment and means of confinement should also assist in mitigating the consequences of design-extension conditions (DECs). Containment and means of confinement should be part of the safety system and may include complementary design features. The application should cover the full spectrum of operational states and accident conditions and should include applicable codes and standards, in accordance with the section addressing facility layout within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

The description should describe, as appropriate, the following information about the systems and components supporting containment and means of confinement:

- heat removal systems
- functional design of the secondary containment
- isolation system
- ventilation system
- penetrations
- protection against overpressure and under-pressure
- control of combustible gas
- venting provisions
- spray system
- leakage testing system

The application should address the design basis requirements for each of the systems identified above. It should also include a schematic presentation of the containment envelope showing the containment boundary for each operational state.

Safety support system

The information submitted should demonstrate that the safety support systems ensure the fundamental safety functions are available in operational states, DBAs and DECs. The design should include emergency safety support systems to cope with the possibility of loss of normal service and, where applicable, concurrent loss of backup systems.

4.5.10 Electrical power systems

In accordance with the sections addressing safety support system and electrical power systems within REGDOC-2.5.2, *Design of Reactor Facilities* [17], the application should specify the required functions and performance characteristics of each electrical power system that provides normal, standby, emergency and alternate power supplies to ensure:

- sufficient capacity to support the safety functions of the connected loads in operational states, DBAs and DECs
- availability and reliability is commensurate with the safety significance of the connected loads

4.5.11 Instrumentation and control

To the extent practicable, the application should describe the instrumentation and control (I&C) systems used to support the safety case of the facility. The applicant should include provision of instrumentation to monitor and control reactor facility variables and systems over the respective ranges for operational states, DBAs and DECs, in order to ensure reactor facility safety and to make sure that adequate information can be obtained on reactor facility status.

For more information, see the following sections of REGDOC-2.5.2, *Design of Reactor Facilities* [17]:

- the section addressing instrumentation and control for general requirements and guidance
- the section addressing design for reliability for requirements and guidance related to reliability and sharing
- the section on human factors for requirements and guidance on this topic

4.5.12 Control facilities

The application should describe the control facilities, including the main control room, secondary control room and emergency support facilities. It should demonstrate that the control facilities are in accordance with the sections addressing human factors and control facilities within REGDOC-2.5.2, *Design of Reactor Facilities* [17] with an emphasis on human/machine interfaces and the safety grouping concept.

The application should provide the following specific information (noting that some information will be preliminary):

- safety class of each information system important to safety
- list of the measured parameters
- physical locations of the sensors
- equipment qualification envelope (defined by the most limiting conditions in operational states or accident conditions)
- duration of the time period for which the reliable operations of the sensors is required

If the measured parameters are processed by a computer, the application should describe:

- characteristics of any computer software (for example, scan frequency, parameter validation, and cross-channel sensor checking) used for filtering, trending or to generate alarms
- long-term storage of data and displays, and how that information will be made available to the operators in the control room and the secondary control room
- implications of the failure of the reactor facility computers and the mitigating strategies developed to provide operators with essential information
- means of achieving the synchronization of the different computer systems if data processing and storage are performed by multiple computers

The description should cover the habitability systems, equipment, supplies and procedures that are in place to ensure that essential workers, including those in the main and secondary control rooms, can remain at their posts and operate the reactor facility safely in all operational states, or to maintain the reactor facility in a safe condition under all accident conditions considered in the safety case.

The application should include considerations of escape routes and means of communication. The documentation should explain how workers will relocate from the main control room to the secondary control room when the circumstances demand it, and should demonstrate that the route is properly qualified to ensure safe passage in these circumstances. In addition to the habitability systems for the control rooms, this section should cover:
- shielding
- air purification systems
- systems for the control of climatic conditions
- storage capacity for food and water, as required

4.5.13 Steam supply system

As applicable to the proposed reactor facility, the applicant should provide design information related to the steam supply system, including the steam lines, steam and feedwater system piping and vessels and turbine generators. The applicant should ensure there is sufficient margin in the design such that pressure boundary limits are not exceeded in operational states and DBAs.

The application should demonstrate that piping and vessels are separated from electrical and control systems to the extent practicable.

The application should demonstrate that turbine generators have protection systems in place to minimize the potential for any missiles from a turbine break up striking SSCs important to safety.

4.5.14 Auxiliary systems

The application should describe the auxiliary systems, including their design basis requirements. It should also describe any other auxiliary system whose operation may influence safety, but has not been covered elsewhere in the application (for example, communication and lighting systems).

Those systems that support SSCs important to safety or safety functions should meet the expectations of the safety support system.

Water systems

As applicable to the proposed reactor facility, the applicant should provide information concerning the water systems associated with the reactor facility, including the station service water systems, the cooling system for reactor auxiliaries, the makeup system for demineralized water, the condenser cooling water system, the fire protection water supply systems, the ultimate heat sink, and the condensate storage facilities.

The application should describe the safety significance and reliability requirements of each of the water systems, taking into account any claims made in the safety case for their availability to provide cooling.

Heat transfer to an ultimate heat sink

The application should describe the systems for transferring residual heat from SSCs important to safety to an ultimate heat sink.

Process auxiliaries

The application should describe the auxiliary systems associated with the reactor process system, including but not limited to the following:

- compressed-air systems
- process and post-accident sampling systems
- equipment drainage and floor drainage systems
- chemical control systems and volume control systems
- purification system

The application should also define the guaranteed shutdown state (GSS) that will support safe maintenance activities of the reactor facility. If soluble poisons are used to provide a GSS, the application should be in accordance with the section addressing guaranteed shutdown state within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

Heating, ventilation and air conditioning systems

The application should describe the reactor facility's heating, ventilation, and air conditioning (HVAC) systems. The description should include areas such as control facilities, the spent fuel pool area, the auxiliary and radioactive waste area, the turbine building (in boiling water reactors), and the ventilation systems for safety systems.

The safety significance of any HVAC system credited in the reactor facility safety analysis should be clearly stated, including all common safety-related functionality dependencies such as the air-conditioning system for an equipment room that may contain multiple divisions or groupings of support systems.

4.5.15 Fuel handling and storage

The application should include a description in accordance with the section addressing fuel handling and storage within REGDOC-2.5.2, *Design of Reactor Facilities* [17], including details for:

- monitoring and alarming
- criticality prevention
- shielding, handling, storage, cooling, transfer and transport of non-irradiated and irradiated fuel (**note:** human/machine interface aspects of fuel handling should be in accordance with the section addressing human factors within REGDOC-2.5.2, *Design of Reactor Facilities* [17])

The application should also include a description of methods for detecting failed fuel within the reactor, in accordance with the section addressing detection of failed fuel within REGDOC-2.5.2, *Design of Reactor Facilities* [17].

4.5.16 Waste treatment and control

To the extent practicable, the application should:

- describe how the generation of radioactive and hazardous wastes is minimized
- how the wastes are characterized, controlled, handled, conditioned and disposed of,
- indicate which systems are or will be in-service before initial fuel load
- provide a schedule for completing the development and implementation of the remaining systems

This information should be in accordance with the following sections of REGDOC-2.5.2, *Design of Reactor Facilities* [17]:

- the section addressing waste treatment and control systems
- the sections addressing instrumentation and control and waste treatment and control systems for the safe handling of waste of all types that is produced at any stage of the reactor facility's lifecycle, from construction to commissioning
- the section addressing human factors considerations

The application should also describe how releases within the reactor facility and to the environment will be monitored and controlled such that they remain within prescribed limits.

4.6 Fitness for service

The fitness for service SCA covers activities that affect the physical condition of SSCs to ensure that they remain effective over time. This area includes programs that ensure all equipment is available to perform its intended design function when called upon to do so.

Fitness for service considerations are addressed within section 4.5 on physical design, and the commissioning considerations within section 4.3 on operating performance.

4.7 Radiation protection

The radiation protection SCA covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations*. This program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled and maintained as low as reasonably achievable (ALARA).

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

The application shall include a radiation protection program, and should demonstrate how the design of that program is commensurate with the radiological hazards associated with, or encountered during, the licensed activities. The application shall also describe how radiological hazards will be monitored and controlled during construction activities, as applicable.

For more information and detailed guidance on radiation protection, including the development of radiation protection programs and ascertaining worker doses, see REGDOC-2.7.1, *Radiation Protection* [25], and REGDOC-2.7.2, *Dosimetry, Volume I: Ascertaining Occupational Dose* [26].

4.8 Conventional health and safety

The conventional health and safety SCA covers the implementation of a program to manage workplace safety hazards and to protect workers.

This section addresses the requirements of the *Canada Labour Code Part II*, and the *Canada Occupational Health and Safety Regulations* or the applicable provincial occupational health and safety legislation. A cross-reference of NSCA-derived legislative clauses to applicable sections is provided in Appendix A.

4.8.1 General considerations

The application should describe the program and implementation of policies to minimize risk to the health and safety of workers posed by conventional (non-radiological) hazards in the workplace, including the management of workplace safety hazards and the protection of personnel.

The applicant should demonstrate that the occupational health and safety (OHS) program meets the requirements set out in all applicable provincial and federal legislation. The application should demonstrate how it ensures that all workers, including contractors, comply with the applicant's health and safety policies and procedures.

The application should demonstrate that the applicant has policies in place to:

- adequately execute the worker health and safety policies and procedures
- make adequate provision for the protection of the health and safety of persons, including provisions to:
  - demonstrate adequate oversight of the site OHS program
  - ensure compliance with applicable OHS regulations and requirements
  - ensure adequate OHS training of persons involved in OHS activities
  - have the capabilities for reporting, investigating and identifying root causes of incidents and significant events
- implement corrective actions to eliminate the identified root causes and verify completion to prevent recurrence

The application should demonstrate how it identifies potential OHS hazards, assesses the associated risks, and puts in place the necessary materials, equipment, programs and measures to effectively manage, control and minimize those risks. The applicant should demonstrate that the handling and storing of hazardous materials complies with the Workplace Hazardous Materials Information System (WHMIS) program.

The application's description of the health and safety program should address periodic inspections, safety meetings, OHS committees and continuous improvement.

The application should describe the measures for monitoring accident severity rate, accident frequency, lost-time injuries, medically treated injuries and disabling injuries.

For more information, see REGDOC-2.8.1, *Conventional Health and Safety* [27].

4.9 Environmental protection

The environmental protection SCA covers programs that identify, control and monitor all releases of radioactive and hazardous substances and effects on the environment, from facilities, or as the result of licensed activities.

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

4.9.1 General considerations

The application shall include a set of environmental protection measures that meet the requirements of REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures* [28]. The application should include detailed information related to the potential environmental effects resulting from the conduct of construction and commissioning activities.

The application should provide proposed timelines and milestones for the development of provisions for environmental protection during the construction phase. It should also include a description of any proposed environmental protection measures that would apply during fuel-in commissioning and reactor facility operation.

The application should identify and describe all standards, guidelines or criteria that have been applied for environmental protection.

4.9.2 Effluent and emissions control (releases)

The application should describe the effluent and emissions monitoring program for the construction phase in terms of releases to air, surface waters, groundwater and soils, from both normal operation and waste management activities. For more information, see CSA N288.5, *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills* [29].

The applicant should demonstrate that the program encompasses all measures to be carried out related to monitoring releases of nuclear and hazardous substances with potential environmental effects. The application should describe how the program integrates all procedures that will sample, measure and analyze releases of nuclear and hazardous substances and physical parameters.

The application should include detailed information on:

- the measures that will be taken to identify potential or expected releases of nuclear substances and hazardous substances to the environment
- criteria established to identify the nuclear and hazardous substances that will be monitored, and the detection limits that will be set to verify the performance of the control measures taken to manage releases, including:
  - where applicable, information on the monitoring of routine releases of nuclear or hazardous substances (such as SO_2, NO_2, CO_2, ammonia, hydrazine, chlorine, morpholine and ozone-depleting substances)
- identification of existing or proposed licensed release limits, action levels and operational targets for releases and the measures taken to comply with them
- alarm systems provided to respond to unplanned releases of nuclear and hazardous substances

- availability targets for the various monitoring devices, and a maintenance program to assure sustained performance of monitoring equipment at their availability targets
- documentation on worker qualifications and the training program for specialist staff and contractors participating in the implementation of the effluent and emissions monitoring program
- documentation on quality assurance and quality control to be followed when undertaking specific monitoring tasks
- documentation on procedures for sampling, analytical methods, calibration of equipment and data management
- documentation outlining the audit and review process for each of the elements of the effluent and emissions monitoring program
- a list of all SSCs that are important control measures (for example, engineered barriers, wastewater treatment systems, air pollution control technology systems, liquid waste monitoring equipment and stack monitoring equipment); see also section 4.5, Physical design
- the maintenance program established to ensure the sustained operational performance of control measures
- any alarm systems to be installed to respond to failure of control measures
- the methods to be used to:
  - prepare, store and retain records of releases that will be made routinely from the site
  - compare those records of releases to available performance indicators (for example, internal investigation levels, administrative levels, and other environmental monitoring objectives and targets)
- identification of the measures that will be taken to make appropriate information available to the authorities and the public (for more information, see REGDOC-3.2.1, *Public Information and Disclosure* [30])

The information submitted should demonstrate how the radiological releases will be monitored and controlled to conform to the ALARA principle.

The applicant should identify environmental action levels for nuclear and hazardous substances released via airborne, waterborne or sewage discharge pathways. For more information, see CSA N288.8, *Establishing and implementing action levels for releases to the environment from nuclear facilities* [31].

The applicant should identify the control measures that will be taken to identify any physical effects to biota, such as impingement and entrainment or habitat loss. For more information, see CSA N288.9, *Guidelines for design of fish impingement and entrainment programs at nuclear facilities* [32].

4.9.3 Environmental management system

The application should describe the environmental management system established to ensure protection of the environment throughout construction. For more information, see:

- REGDOC-2.9.1, *Environmental Principles, Assessments and Protection Measures* [28]
- CAN/CSA-ISO 14001, *Environmental management systems – Requirements with guidance for use* [33]

The description of the environmental management system should include information on:

- emissions management
- spills management
- land assessment and remediation management
- waste management
- management of polychlorinated bi-phenyls (PCBs)
- management of ozone-depleting substances
- management of environmental impacts
- licensed release limits and action levels
- monitoring of radioactivity in effluents and emissions
- management of the offsite radiological environmental monitoring program
- management of adverse effects on fish population (fish impingement and entrainment, and thermal effects)

4.9.4 Assessment and monitoring

The application should describe the environmental risk assessment predicted effects and associated monitoring system proposed for the site during construction activities. For more information, see:

- REGDOC-2.9.1, *Environmental Principles, Assessments and Protection Measures* [28]
- CSA N288.4, *Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills* [34]
- CSA N288.5, *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills* [29]
- CSA N288.6, *Environmental risk assessment at Class I nuclear facilities and uranium mines and mills* [35]
- CSA N288.9, *Guidelines for design of fish impingement and entrainment programs at nuclear facilities* [32]

The application should also update the description of environmental components, where applicable, that were included in the application for a licence to prepare site to determine the environmental baseline characteristics of the site and the surrounding area.

The descriptions should be sufficiently detailed to provide the information necessary to support emergency actions in response to external events, to support a periodic review of safety at the site, and to develop dispersion modeling for radioactive material. The descriptions should also serve as confirmation of the completeness of the set of site-specific hazards that have been taken into account.

4.10 Emergency management and fire protection

The emergency management and fire protection SCA covers emergency plans and emergency preparedness programs that exist for emergencies and for non-routine conditions. This area also includes any results of participation in exercises.

Note: This SCA includes conventional emergency and fire response. Fire protection operations, design and analysis are discussed in the appropriate SCA of operating performance, safety analysis or physical design.

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

4.10.1 General considerations

The applicant shall provide details of the emergency preparedness program that is proposed to be implemented under the licence to construct a reactor facility. The emergency preparedness program shall meet all requirements applicable to the construction phase within:

- REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs* [8]
- REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response* [36]
- CSA N1600:21, *General Requirements for Nuclear Emergency Management Programs* [37]

The application should provide proposed timelines and milestones for development of provisions for emergency preparedness and fire protection in anticipation of fuel-in commissioning and reactor facility operation.

Note: The applicant can develop nuclear emergency plans in stages, leading to a future licence application to load nuclear fuel into the reactor. However, a comprehensive nuclear emergency program as detailed in REGDOC-2.10.1 [36] must be established prior to loading nuclear fuel into a reactor.

4.10.2 Emergency preparedness and response

The application's emergency preparedness and fire protection provisions shall take into account the location of the facility (greenfield, or on an existing reactor facility site such as an existing nuclear power plant).

The application shall describe any natural or artificial events within and beyond the design basis that would affect emergency management requirements (for example, forest fires, earthquakes, extreme weather conditions (such as tornados and floods), toxic fume clouds, explosions and airplane crashes).

The application shall describe how the applicant intends to conduct emergency exercises and drills as outlined in their nuclear emergency plan, as applicable to the construction phase.

The application shall describe all non-radiological, non-routine conditions at the facility for which the emergency preparedness program has been established.

For applications to construct a new reactor facility on an existing reactor facility site, the application shall include detailed emergency procedures for the construction site if there is an emergency initiating from the existing reactor facility that would affect the construction site for the new reactor facility.

The application should:

- address emergency situations that could endanger the safety of onsite workers, the environment and the public
- include emergency procedures to deal with fires, medical emergencies, environmental spills, natural disasters, rescues, offsite accidents that could affect the construction site, and any other emergency situations or accidents that could occur
- include details of emergency response organizations, personnel and equipment for responding to emergencies; some examples are site emergency personnel, municipal emergency response organizations, and provincial or federal organizations
- as applicable, include information outlining the interfaces with the provincial nuclear emergency response plans and coordination with the municipalities and foreign states in the surrounding region when implementing the emergency plan and related protective actions
- provide information on the proximity to the reactor facility of airports, railways, roads and emergency services

The description of the emergency plan should also include:

- a basis for emergency planning
- program management
- emergency response organization, including staffing, roles and responsibilities, and activation
- emergency training, drills and exercises
- emergency response plan and procedures, including:
    - validation of emergency response plans and procedures
    - maintenance of documents
    - communication and information flow
- activation and termination of emergency responses
- protection of facility workers and equipment
- facilities and equipment maintenance
- supporting agreements, plans and procedures between onsite and offsite response organizations

4.10.3 Fire protection program

The application should provide a fire protection program that describes how the fire protection activities will be implemented, managed and monitored during the construction phase to ensure that fire risks are minimized.

4.11 Waste management

Waste management includes both nuclear and hazardous substances that are used or produced in the course of carrying on a licensed activity and that may pose a risk to the environment or the health and safety of persons.

For construction, the applicant should consider how to manage existing onsite hazardous substances that have been identified during site evaluation, as well as the hazardous substances that will be produced during activities encompassed by the licence to construct.

Where radioactive contamination above exemption quantities from pre-existing facilities or activities is a potential concern, the applicant shall address the relevant sections of REGDOC-2.11.1, *Waste Management, Volume I: Management of Radioactive Waste* [38].

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

4.11.1 Hazardous substances and hazardous wastes

The applicant shall address:

- quantities and physical characteristics (including hazards posed to health and safety) of each substance or waste, including by-products
- for all substances or by-products that are regulated or controlled, the appropriate list of regulations governing their control
- transport, storage and use of hazardous substances
- processing and disposing of hazardous wastes

The applicant should characterize all hazardous substances and hazardous wastes in a list as follows:

- name and origin of hazardous substance or hazardous waste
- anticipated quantity or volume, and anticipated form
- possible by-products that could evolve from:
  - the hazardous substance or hazardous waste
  - any interactions between the hazardous substance or hazardous waste, or between the possible by-products
- hazards to workers and the public who may be exposed to the hazardous substance, hazardous waste or by-products
- how the hazardous substance, hazardous waste or by-products will be processed or disposed of at the site

4.11.2 Waste minimization

The application should describe the measures that will be taken to minimize the accumulation of hazardous waste produced during construction.

The application should describe the methods, such as design measures and technology, that are part of the reactor's design to minimize radioactive waste generation at the source during operation.

4.11.3 Decommissioning practices

At construction, the applicant shall consider two areas of decommissioning:

- construction from a decommissioning perspective
- activities encompassed by the licence to construct: a preliminary decommissioning plan and financial guarantee that covers the scope of work and related costs to return the site from the conditions expected at the end of a licence to construct to an agreed-upon end state (including, if the project is halted, restoration of the site to the original condition)

The preliminary decommissioning plan shall be in accordance with REGDOC-2.11.2, *Decommissioning* [39].

For further guidance on decommissioning, refer to REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities* [40].

4.12 Security

The security SCA covers the programs required to implement and support the security requirements stipulated in the regulations, the licence, orders, or expectations for the facility or activity.

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

4.12.1 General considerations

The application shall describe a security program that meets the requirements of:
- REGDOC-2.1.2, *Safety Culture* [10]
- REGDOC-2.12.1, *High-Security Facilities, Volume II: Criteria for Nuclear Security Systems and Devices* [41] (prescribed - available upon request to those who have a need to know)
- REGDOC-2.12.2, *Site Access Security Clearance* [42]
- REGDOC-2.12.3, *Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material* [4]
- REGDOC-2.2.4, *Fitness for Duty, Volume II, Managing Alcohol and Drug Use* [13]
- REGDOC-2.2.4, *Fitness for Duty, Volume III: Nuclear Security Officer Medical, Physical, and Psychological Fitness* [43]

For additional information, see IAEA NSS No. 35-G, *Security during the Lifetime of a Nuclear Facility* [44].

Because construction may include fuel-out (or phase A) commissioning, the application's security provisions shall address the measures necessary to protect the reactor facility throughout construction and fuel-out commissioning. For more information on protecting SSCs under construction and on methods to detect and deter conditions that may affect site security, see REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs* [8].

The application should provide information on the following security program elements, including but not limited to:
- threat risk assessment (TRA)
- facilities and equipment
- security practices
- response arrangements
- security training and qualification

4.12.2 Cyber security

The application should describe a cyber security program that ensures digital computer-based systems or components that are subject to cyber security requirements are protected from cyber attacks. The application should address internal and external cyber threats.

The application should describe how the cyber security program is designed, implemented and maintained as an effective program. The application should provide information on the following program elements, including but not limited to:
- defensive strategy and security architecture
- policies and procedures
- asset identification and classification

- roles and responsibilities of the involved parties
- security controls
- awareness and training
- configuration management
- coordination with other programs
- incident response, reporting and recovery plan
- program review and maintenance
- lifecycle approach to cyber assets

4.13 Safeguards and non-proliferation

The safeguards and non-proliferation SCA covers the programs and activities required for the successful implementation of the obligations arising from the Canada/International Atomic Energy Agency (IAEA) safeguards agreements as well as all other measures arising from the *Treaty on the Non-Proliferation of Nuclear Weapons* (IAEA INFCIRC/140) [45].

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

The legislative clauses ensure that the CNSC is able to achieve conformity with measures of control and international obligations to which Canada has agreed, including the following safeguards agreements:

- *Agreement between the Government of Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons* (IAEA INFCIRC/164) [46]
- *Protocol Additional to the Agreement between Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons* (IAEA INFCIRC/164/Add.1) [47]

4.13.1 General considerations

Either before, or concurrent with, applying for a licence to construct a reactor facility, the applicant must complete and submit to the CNSC an IAEA safeguards design information questionnaire (available upon request from the CNSC's International Safeguards Division). The CNSC encourages early engagement on the completion of this questionnaire, particularly for novel technologies where safeguards measures have not yet been developed. For more information, see REGDOC-2.13.1, *Safeguards and Nuclear Material Accountancy* [48].

The applicant shall provide a description of the arrangements made to permit the CNSC to discharge Canada's obligations and provide information to the IAEA. The application shall describe how the arrangements address the requirements in REGDOC-2.13.2, *Import and Export* [49] and REGDOC-2.13.1, *Safeguards and Nuclear Material Accountancy* [48], and are in accordance with the sections addressing safeguards and fuel handling and storage within REGDOC-2.5.2, *Design of Reactor Facilities* [17]. A reactor under construction is categorized as a "facility" under REGDOC-2.13.1. The application shall describe how the safeguards program ensures that the requirements in the REGDOC for safeguards equipment and seals, IAEA access, nuclear material accountancy, provision of information, and retention of records are met during the construction phase.

The application should describe measures related to site buildings and structures, operational parameters and the flow and storage of nuclear material, from the reactor facility's design and commissioning phases through to its decommissioning and eventual abandonment.

For reactor facilities, the non-proliferation program is limited to the tracking and reporting of international obligations and origins of nuclear material.

For the purposes of the application and its review, document ownership will vary between the IAEA, the CNSC and the applicant:

- the IAEA is responsible for the generic safeguards approach
- the CNSC is responsible for:
  - coordinating with the IAEA in developing the generic safeguards approach
  - negotiating the safeguards arrangements with the IAEA for the applicant facility
  - monitoring the applicant’s compliance with safeguards documents, requirements and obligations
- the applicant is responsible for establishing and implementing the safeguards program

4.14 Packaging and transport

The packaging and transport SCA covers programs for the safe packaging and transport of nuclear substances. If applicable, the applicant shall describe the measures that will be in place to ensure compliance with all the requirements of the *Packaging and Transport of Nuclear Substances Regulations*, *2015*, and Transport Canada's *Transportation of Dangerous Goods Regulations*.

If the applicant proposes to transport fuel onto the site under the licence to construct, the applicant shall address the requirements and guidance of the packaging and transport section of REGDOC-1.1.3, *Licence Application Guide: Licence to Operate a Nuclear Power Plant* [50].

5. Other Regulatory Areas

A cross-reference of legislative clauses to applicable sections is provided in Appendix A.

5.1 Reporting requirements

The applicant should describe, as applicable to the construction phase, how the reporting and trending programs, processes and procedures address the requirements of REGDOC-3.1.1, *Reporting Requirements for Nuclear Power Plants* [51].

5.2 Public information and disclosure program

The applicant shall describe how their proposed public information and disclosure program (required by all licensees) meets the requirements in REGDOC-3.2.1, *Public Information and Disclosure* [30].

The description shall include how and with what tools the licensee will communicate with the public, particularly with those persons living in the vicinity of the site, and the general nature and characteristics of the anticipated effects on the environment and the health and safety of persons that may result from the operation of the facility (listed under "General Requirements for Licence Applications" under section 3(j) of the *Class I Nuclear Facilities Regulations*).

For new facilities, the applicant should demonstrate that ongoing engagement with appropriate parties has been continued from construction activities and integrated into operational activities.

5.3 Indigenous engagement

The CNSC, as an agent of the Crown, has the responsibility for fulfilling Canada's legal duty to consult, and where appropriate to accommodate Indigenous peoples when the CNSC’s decisions may have had adverse effect on potential or established Indigenous or treaty rights. The CNSC is committed to meaningful ongoing engagement and consultation with Indigenous groups who have an interest in facilities and activities regulated by the CNSC.

The applicant shall describe how their Indigenous engagement plan and activities meet the requirements in REGDOC-3.2.2, *Indigenous Engagement* [52], which clarifies requirements and provides guidance for applicants and licensees whose proposed projects may raise the Crown's duty to consult. While the CNSC cannot delegate its obligation, it can delegate procedural aspects of the consultation process to licensees, where appropriate. The information collected and measures proposed by applicants and licensees to avoid, mitigate or offset adverse effects on Indigenous or treaty rights may be used by the CNSC in meeting its obligations for consultation.

5.4 Cost recovery and financial guarantees

Each reactor facility licensee in Canada has the prime responsibility for the safety of its facility, including providing adequate financial resources to support the safety of each reactor facility throughout its life.

5.4.1 Cost recovery

A construction licence for a reactor facility is subject to the requirements of Part 2 of the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*. Applicants are responsible for payment of the annual fees determined by CNSC. Payments are normally requested on a quarterly basis and are due to the Receiver General of Canada.

The applicant should discuss the details of the amount and payment plan with the CNSC.

For additional information, refer to the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*.

5.4.2 Financial guarantees

The application should describe the financial guarantees for the costs of decommissioning the reactor facility according to the NSCA and the *General Nuclear Safety and Control Regulations*. The applicant should also provide a cross-reference to the supporting document regarding the value and form of the financial guarantee.

For more information about financial guarantees and licensing, consult REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities* [40].

Appendix A: Legislative Clauses

The information submitted by an applicant for a licence to construct a reactor facility is based on the relevant clauses from legislation, including the *Nuclear Safety and Control Act* (NSCA) and the regulations made under the NSCA. Table A.1 lists select relevant sections of this application guide, which are aligned with the CNSC's safety and control areas (SCAs). This table is provided for information and reference purposes; applicants are responsible for ensuring that all requirements under the NSCA and regulations for the proposed activities are addressed in an application.

Table A.1: Clauses in the NSCA and the regulations made under the NSCA, mapped to the relevant sections of this licence application guide

Legislation	Clause(s)	Section(s) in this document
NSCA	24(4)	Every SCA (sections 4.1 through 4.14) 5, Other Regulatory Areas
	26(a), (e)	Every SCA (sections 4.1 through 4.14) 5, Other Regulatory Areas
General Nuclear Safety and Control Regulations (GNSCR)	3(1)(a)	3.1.1, Applicant's name and business address
	3(1)(b)	3.2.2, Statement of the main purpose
	3(1)(c)	3.2.5, Nuclear substances 4.9, Environmental protection 4.11, Waste management
	3(1)(d)	3.2.2, Statement of the main purpose 4.4, Safety analysis 4.5, Physical design 4.10, Emergency management and fire protection 4.11, Waste management 4.12, Security
	3(1)(e)	4.4, Safety analysis 4.5, Physical design 4.7, Radiation protection 4.9, Environmental protection 4.11, Waste management 4.12, Security 4.14, Packaging and transport
	3(1)(f)	4.7, Radiation protection
	3(1)(g)	4.5, Physical design 4.12, Security 4.13, Safeguards and non-proliferation
	3(1)(h)	4.5, Physical design 4.12, Security 4.13, Safeguards and non-proliferation

Legislation	Clause(s)	Section(s) in this document
	3(1)(i)	4.4, Safety analysis 4.5, Physical design 4.7, Radiation protection 4.9, Environmental protection 4.10, Emergency management and fire protection (all requirements related to fire) 4.11, Waste management 4.12, Security
	3(1)(j)	4.5, Physical design 4.11, Waste management
	3(1)(k)	3.1.6, Identification of persons responsible for management and control of the licensed activity 4.1, Management system 4.2, Human performance management 4.3, Operating performance
	3(1)(l)	5, Other regulatory areas
	3(1)(m)	5. Other regulatory areas
	3(2)	4.13, Safeguards and non-proliferation
	10(b)	4.13, Safeguards and non-proliferation
	12(1)(a)	4.1, Management system 4.2, Human performance management 4.7, Radiation protection 4.10, Emergency management and fire protection 4.12, Security
	12(1)(b)	Every SCA (sections 4.1 through 4.14)
	12(1)(c)	4.3, Operating performance 4.4, Safety analysis 4.5, Physical design 4.7, Radiation protection 4.8, Conventional health and safety 4.9, Environmental protection 4.10, Emergency management and fire protection 4.11, Waste management 4.12, Security
	12(1)(d)	4.7, Radiation protection 4.9, Environmental protection 4.10, Emergency management and fire protection 4.12, Security
	12(1)(e)	4.2, Human performance management 4.3, Operating performance 4.7, Radiation protection 4.10, Emergency management and fire protection

Legislation	Clause(s)	Section(s) in this document
	12(1)(f)	4.3, Operating performance 4.4, Safety analysis 4.5, Physical design 4.7, Radiation protection 4.9, Environmental protection 4.10, Emergency management and fire protection
	12(1)(g)	4.10, Emergency management and fire protection 4.12, Security
	12(1)(h)	4.10, Emergency management and fire protection 4.12, Security
	12(1)(i)	4.13, Safeguards and non-proliferation
	12(1)(j)	4.2, Human performance management 4.12, Security
	15	3.1.6, Identification of persons responsible for management and control of the licensed activity 4.1, Management system
	15(a)	3.1.3, All persons who have authority to interact for the applicant with the CNSC 3.1.8, Legal signing authority
	15(b)	3.1.3, All persons who have authority to interact for the applicant with the CNSC 3.1.6, Identification of persons responsible for management and control of the licensed activity
	15(c)	3.1, Identification and contact information
	17(a)	4.2, Human performance management 4.3, Operating performance 4.7, Radiation protection 4.8, Conventional health and safety 4.9, Environmental protection
	17(b)	4.2, Human performance management 4.3, Operating performance 4.7, Radiation protection 4.8, Conventional health and safety 4.9, Environmental protection
	17(c)	4.1, Management system 4.2, Human performance management 4.3, Operating performance 4.7, Radiation protection 4.8, Conventional health and safety 4.9, Environmental protection 4.12, Security

Legislation	Clause(s)	Section(s) in this document
	17(d)	4.2, Human performance management 4.3, Operating performance 4.7, Radiation protection 4.8, Conventional health and safety
	17(e)	4.1, Management system 4.2, Human performance management Personnel training 4.3, Operating performance 4.7, Radiation protection 4.8, Conventional health and safety 4.9, Environmental protection 4.12, Security
	20(a)	4.14, Packaging and transport
	20(d)	4.13, Safeguards and non-proliferation
	21	4.12, Security
	21(1)(a)	4.13, Safeguards and non-proliferation
	21(1)(b)	4.13, Safeguards and non-proliferation
	22	4.12, Security
	23	4.12, Security
	23(2)	4.13, Safeguards and non-proliferation
	27	[…keep a copy of all info relating to the licence that is submitted by the licensee to the Commission… see section 3] 2.6, Submitting the licence application 4.1, Management system
	28	4.1, Management system
	28(1)	4.12, Security
	29	4.3, Operating performance 4.7, Radiation protection 4.12, Security 5.1, Reporting requirements
	30	4.3, Operating performance 4.12, Security 4.13, Safeguards and non-proliferation 5.1, Reporting requirements
	31	5.1, Reporting requirements
	32	4.3, Operating performance 5.1, Reporting requirements
Canadian Nuclear Safety Commission Cost Recovery Fees Regulations	all	5.4, Cost recovery, financial guarantees and insurance

Legislation	Clause(s)	Section(s) in this document
Class I Nuclear Facilities Regulations	3(a)	3.2.3, Description of site 4.5, Physical design 4.10, Emergency management and fire protection 4.12, Security
	3(b)	3.2.3, Description of site 4.4, Safety analysis 4.5, Physical design 4.12, Security
	3(c)	3.1.5, Evidence that the applicant is the owner of the site…
	3(d)	4.1, Management system
	3(e)	3.2.5, Nuclear and hazardous substances 4.8, Conventional health and safety 4.9, Environmental protection 4.11, Waste management
	3(f)	4.1, Management system 4.2, Human performance management 4.8, Conventional health and safety 4.10, Emergency management and fire protection 4.11, Waste management
	3(g)	4.9, Environmental protection
	3(h)	4.9, Environmental protection
	3(i)	4.5, Physical design 4.12, Security
	3(j)	5, Other regulatory areas
	3(k)	4.11, Waste management
	5(a)	4.5, Physical design
	5(b)	4.5, Physical design 4.9, Environmental protection
	5(c)	4.3, Operating performance
	5(d)	4.5, Physical design
	5(e)	4.3, Operating performance 4.5, Physical design
	5(f)	4.4, Safety analysis 4.5, Physical design
	5(g)	4.1, Management system
	5(h)	4.1, Management system 4.12, Security 4.13, Safeguards and non-proliferation

Legislation	Clause(s)	Section(s) in this document
	5(i)	4.1, Management system 4.2, Human performance management 4.3, Operating performance 4.7, Radiation protection 4.8, Conventional health and safety 4.9, Environmental protection 4.10, Emergency management and fire protection 4.11, Waste management 4.12, Security 4.14, Packaging and transport
	5(j)	4.7, Radiation protection 4.9, Environmental protection 4.11, Waste management
	5(k)	4.1, Management system 4.5, Physical design 4.7, Radiation protection 4.9, Environmental protection 4.10, Emergency management and fire protection 4.11, Waste management
	5(l)	4.2, Human performance management 4.7, Radiation protection
	5(m)	4.2, Human performance management 4.3, Operating performance
	9	4.2, Human performance management
	10	4.2, Human performance management
	11	4.2, Human performance management
	12	4.2, Human performance management
	14	4.7, Radiation protection
	14(1)	4.1, Management system 4.9, Environmental protection 4.11, Waste management
	14(4)	4.1, Management system
	14(5)	4.1, Management system
Nuclear Non-proliferation Import and Export Control Regulations	all	4.13, Safeguards and non-proliferation
Nuclear Security Regulations	all	4.5, Physical design 4.12, Security
	3(b)	3.2.3, Description of site
	16	3.2.3, Description of site
	37(1), (2) and (3)	4.1, Management system

Legislation	Clause(s)	Section(s) in this document
	38	4.1, Management system 4.2, Human performance management
Nuclear Substances and Radiation Devices Regulations	5	4.7, Radiation protection
	8	4.7, Radiation protection
	20	4.7, Radiation protection
	23	4.7, Radiation protection
	36(1)(a)	4.1, Management system 4.12, Security
	36(1)(b)	4.1, Management system
	36(1)(c)	4.1, Management system
	36(1)(d)	4.1, Management system 4.12, Security
	36(1)(e)	4.1, Management system
Packaging and Transport of Nuclear Substances Regulations, 2015	all	4.14, Packaging and transport
Radiation Protection Regulations	all	4.3, Operating performance 4.4, Safety analysis (all requirements related to dose) 4.5, Physical design 4.7, Radiation protection 4.9, Environmental protection 4.11, Waste management

Appendix B: Safety and Control Areas

The CNSC's regulatory requirements and expectations for the safety performance of programs are grouped into three functional areas and 14 safety and control areas (SCAs). The SCAs are further divided into specific areas that define the key components of each SCA. Table B.1 shows a list of the functional areas, SCAs and the specific areas that define the key components of each SCA.

Table B.1: The CNSC's functional areas, safety and control areas, and specific areas

Functional area	Safety and control area (SCA)	Specific area
Management	1. Management system	Management system
		Organization
		Performance assessment, improvements and management review
		Operating experience (OPEX)
		Change management
		Safety culture
		Configuration management
		Records management
		Management of contractors
		Business continuity
	2. Human performance management	Human performance program
		Personnel training
		Personnel certification
		Work organization and job design
		Fitness for duty
	3. Operating performance	Conduct of licensed activities
		Procedures
		Reporting and trending
		Outage management performance
		Safe operating envelope
		Severe accident management and recovery
		Accident management and recovery
Facility and equipment	4. Safety analysis	Deterministic safety analysis
		Hazard analysis
		Probabilistic safety assessment
		Criticality safety
		Severe accident analysis
		Management of safety issues (including R&D programs)
	5. Physical design	Design governance
		Site characterizations
		Facility design
		Structure design
		System design
		Components design
	6. Fitness for service	Equipment fitness for service / equipment performance

Functional area	Safety and control area (SCA)	Specific area
		Maintenance
		Structural integrity
		Aging management
		Chemistry control
		Periodic inspections and testing
Core control processes	7. Radiation protection	Application of ALARA
		Worker dose control
		Radiation protection program performance
		Radiological hazard control
	8. Conventional health and safety	Performance
		Practices
		Awareness
	9. Environmental protection	Effluent and emissions control (releases)
		Environmental management system (EMS)
		Protection of people
		Assessment and monitoring
		Environmental risk assessment
	10. Emergency management and fire protection	Conventional emergency preparedness and response
		Nuclear emergency preparedness and response
		Fire emergency preparedness and response
	11. Waste management	Waste characterization
		Waste minimization
		Waste management practices
		Decommissioning plans
	12. Security	Facilities and equipment
		Response arrangements
		Security practices
		Drills and exercises
		Cyber security
	13. Safeguards and non-proliferation	Nuclear material accountancy and control
		Access and assistance to the IAEA
		Operational and design information
		Safeguards equipment, containment and surveillance
		Import and export
	14. Packaging and transport	Package design and maintenance
		Packaging and transport
		Registration for use

Appendix C: Review Objectives for an Application for a Licence to Construct a Reactor Facility

When establishing the scope of the review for an application to construct a reactor facility, CNSC staff consider three levels of objectives. These objectives are developed to assist in integrating individual reviews into an overall assessment of the adequacy of a licence application.

C.1 First-level objectives

The first-level objectives are described in subsection 24(4) of the *Nuclear Safety and Control Act* (NSCA). Additionally, the facility design and operation needs to address the mitigation measures identified in the environmental review.

C.2 Second-level objectives

The second-level objectives are:

S **Design safety objective:** The design of a reactor facility to be constructed should make adequate provisions (not pose an unreasonable risk) for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

C **Construction program objective:** Adequate provisions should be made for the construction of the reactor facility to be carried on in a safe manner and with sufficient quality.

Q **Qualifications objective:** The applicant, and all entities involved in the design, construction and commissioning of the reactor facility, should be qualified to carry on the licensed activity. The program and schedule for recruiting, training, qualifying and certifying workers in respect of the operation and maintenance of the reactor facility should be adequate.

The design safety objective captures a large portion of the general nuclear safety objective, as established by the International Atomic Energy Agency (IAEA) and explicitly stated in REGDOC-2.5.2, *Design of Reactor Facilities* [17] that reactor facilities "be designed and operated in a manner that will protect individuals and society from harm".

The construction program objective expresses the high-level expectations for the construction program.

The qualifications objective expresses the high-level expectations to have adequately qualified persons for the design, construction and commissioning of the reactor facility. It also addresses the requirements of the *Class I Nuclear Facilities Regulations* related to training, qualification and certification of workers.

C.3 Third-level objectives

Meeting the design safety objective means satisfying the relevant expectations outlined in:

- REGDOC-2.5.2, *Design of Reactor Facilities* [17]
- REGDOC-2.4.1, *Deterministic Safety Analysis* [16]

Each of the second-level objectives can be subdivided into third-level objectives, which have more specific means of assessment. In reviewing an application for a licence to construct a reactor facility, CNSC staff assess whether the objectives are met for the applicable topical areas.

Third-level objectives related to the design safety objective are:

SO1 The design captures all of the mitigation measures identified during the environmental review and ensures that operating performance meets all regulatory requirements concerning the nuclear and hazardous releases.

SO2 The design follows the ALARA principle.

SO3 The design complies with the dose acceptance criteria and safety goals.

SO4 The design complies with the defence-in-depth principle.

SO5 The fundamental safety functions perform adequately in the design.

SO6 The design provides adequate means to mitigate and manage accidents.

SO7 Adequate design provisions have been made for security and design robustness.

SO8 The management system of programs, policies and procedures fosters a healthy safety culture and it is adequate for the design, construction, and commissioning of the reactor facility.

SO9 The management system of programs, policies and procedures fosters a healthy safety culture and it is adequate for the future operation and decommissioning of the reactor facility.

SO10 Adequate design, infrastructure and programmatic provisions are made in the area of safeguards.

Third-level objectives related to the construction program objective are:

CO1 Adequate assurance that all activities involving construction/erection of structures and systems and fabrication/erection of components are carried out by qualified personnel.

CO2 Adequate provisions have been made to ensure that relevant rules and regulations will be followed during fabrication, construction and erection activities and that the construction/erection activities are conducted in a safe manner.

CO3 Sufficient quality of fabrication, erection and construction is assured and adequate provisions are made to minimize design deviations.

CO4 Adequate plans for inactive commissioning of the built reactor facility (without a fuel load) are in place.

Third-level objectives for the qualifications objective are:

QO1 The applicant is qualified to oversee all design, construction and commissioning activities carried out by itself, or by contractors or subcontractors.

QO2 The applicant has enough qualified staff to oversee all design, construction and commissioning activities carried out by itself, or by contractors or subcontractors.

QO3 All contractors and subcontractors involved in the design, construction and commissioning of the reactor facility are qualified to carry out their respective activities.

QO4 The proposed full-scope training simulator for the reactor facility is adequate.

Appendix D: Sample Format for Listing the Supporting Documentation

The applicant should ensure that the licence application addresses all of the information requested in this licence application guide. The applicant is encouraged to map the information provided to the related sections and subsections of this document. **Note:** The applicant may have already provided supporting documentation in an application for a licence for site preparation.

For this supporting documentation and information, the application should clearly identify the information that has already been submitted and provide a list of the supporting documents.

D.1 Sample (suggested) format

This table provides a sample format that the applicant may consider for providing a mapping of the supporting information to the SCA framework. It also provides a sample format for cross-referencing applicable information that has been previously provided to the CNSC.

Note: The column heading "In LCH for WN (Y/N)" indicates whether the document is identified in the licensee's current licence conditions handbook (LCH) as a document requiring written notification (WN) of change to the CNSC.

Document		Version	In LCH for WN (Y/N)	Previously submitted (Y/N)	Related sections and subsections of REGDOC-1.1.2
Identifier	Title				
					e.g., 4.1

Appendix E: Sample Format for Listing Revisions to the Supporting Documentation

If a document version in the supporting information has changed since the previous submission, the applicant must provide the CNSC with the new version number, a copy of the new version, and a summary of major changes between the new version and the version that was reviewed by CNSC staff.

E.1 Sample (suggested) format

This table provides a sample format that the applicant may consider for providing a list of the supporting documents that have changed since the previous submission.

Note: The column heading "In LCH for WN (Y/N)" indicates whether the document is identified in the licensee's current licence conditions handbook (LCH) as a document requiring written notification (WN) of change to the CNSC.

Document		Original version number	In LCH for WN (Y/N)	Current version number	Summary of changes (use as many lines as necessary)
Identifier	Title				

Glossary

For definitions of terms used in this document, see REGDOC-3.6, *Glossary of CNSC Terminology*, which includes terms and definitions used in the *Nuclear Safety and Control Act* and the regulations made under it, and in CNSC regulatory documents and other publications.

The following terms are either new terms being defined, or include revisions to the current definition for that term. Following public consultation, the final terms and definitions will be submitted for inclusion in the next version of REGDOC-3.6, *Glossary of CNSC Terminology*.

authority having jurisdiction (AHJ) *(autorité compétente (AC))*
The regulatory organization, office or agency responsible for approving or accepting designs, equipment, materials, installations or procedures in accordance with applicable codes and standards.
Note 1: In Canada, the regulatory authorities are the Canadian Nuclear Safety Commission (CNSC) and other provincial or federal government agencies that have jurisdiction.
Note 2: AHJ is also referred to as "regulatory authority".

engineering, procurement and construction (EPC) *(ingénierie, approvisionnement et construction (IAC))*
A common form of contract used to undertake construction works on large-scale and complex infrastructure projects. Note: This term may also include commissioning.

engineering, procurement and construction management (EPCM) *(gestion de l'ingénierie, approvisionnement et construction (GIAC))*
A contracting arrangement where the client selects a contractor who provides management services for the entire project on behalf of the client.

EPC *(IAC)*
See engineering, procurement and construction.

EPCM *(IACG)*
See engineering, procurement and construction management.

FSSA/FHA *(French)*
Fire safe shutdown assessment and fire hazard assessment

informed customer *(client informé)*
A concept that describes an organization with the capability (expertise and proficiency) to ensure effective management, control, and oversight of nuclear safety (such as health, safety, protection of the environment, safeguards and security), including work carried out on its behalf by contractors. Such organizations have a clear understanding and knowledge of each product or service being supplied, specify the requirements for those products and services, oversee the work carried out on its behalf by contractors and technically review the output before, during and after the work.

Tier 1 *(Niveau 1)*
The design consultants and the main contractor who work directly for the employer (that is, they have a direct contract with the client). The main contractor may have a limited chain of their own suppliers.

Tier 2 *(Niveau 2)*
Specialist contractors who provide a variety of service for the main (Tier 1) contractors and suppliers. A Tier 2 specialist is sub-contracted through one of the main (Tier 1) contractors or suppliers.

References

The CNSC may include references to information on best practices and standards such as those published by CSA Group. With permission of the publisher, CSA Group, all nuclear-related CSA standards may be viewed at no cost through the CNSC Web page "How to gain free access to all nuclear-related CSA standards".

1. Canadian Nuclear Safety Commission (CNSC), REGDOC-1.1.5, *Supplemental Information for Small Modular Reactor Proponents*, Ottawa, Canada
2. CNSC, REGDOC-3.5.3, *Regulatory Fundamentals*, Ottawa, Canada
3. CNSC, REGDOC-3.5.1, *Licensing Process for Class I Nuclear Facilities and Uranium Mines and Mills*, Ottawa, Canada
4. CNSC, REGDOC-2.12.3, *Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material*, Ottawa, Canada
5. Treasury Board of Canada Secretariat *Policy on Government Security*
6. CSA Group, CSA N286-12, *Management system requirements for nuclear facilities*, Mississauga, Canada
7. CNSC, REGDOC-2.1.1, *Management System*, Ottawa, Canada
8. CNSC, REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs*, Ottawa, Canada
9. CSA Group, CSA N286.10, *Configuration management for high energy reactor facilities*, Mississauga, Canada
10. CNSC, REGDOC-2.1.2, *Safety Culture*, Ottawa, Canada
11. CNSC, REGDOC-2.2.1, *Human Factors*, Ottawa, Canada
12. CNSC, REGDOC-2.2.4, *Fitness for Duty: Managing Worker Fatigue*, Ottawa, Canada
13. CNSC, REGDOC-2.2.4, *Fitness for Duty Volume II: Managing Alcohol and Drug Use*, Ottawa, Canada
14. CNSC, REGDOC-2.2.2, *Personnel Training*, Ottawa, Canada
15. CSA Group, CSA A23.1:19/CSA A23.2:19, *Concrete materials and methods of concrete construction / Test methods and standard practices for concrete*, Mississauga, Canada
16. CNSC, REGDOC-2.4.1, *Deterministic Safety Analysis*, Ottawa, Canada
17. CNSC, REGDOC-2.5.2, *Design of Reactor Facilities*, Ottawa, Canada
18. CNSC, REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*, Ottawa, Canada
19. CNSC, REGDOC-2.4.2, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants*, Ottawa, Canada
20. CNSC, REGDOC-2.3.2, *Accident Management*, Ottawa, Canada

21. CNSC, REGDOC-2.6.1, *Reliability Programs for Nuclear Power Plants*, Ottawa, Canada
22. CNSC, REGDOC-2.5.1, *General Design Considerations: Human Factors*, Ottawa, Canada
23. CSA Group, CSA N290.12-14, *Human factors in design for nuclear power plants*, Mississauga, Canada
24. CNSC, REGDOC-2.4.3, *Nuclear Criticality Safety*, Ottawa, Canada
25. CNSC, REGDOC-2.7.1, *Radiation Protection*, Ottawa, Canada
26. CNSC, REGDOC-2.7.2, *Dosimetry, Volume I: Ascertaining Occupational Dose*, Ottawa, Canada
27. CNSC, REGDOC-2.8.1, *Conventional Health and Safety*, Ottawa, Canada
28. CNSC, REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures*, Ottawa, Canada
29. CSA Group, CSA N288.5, *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills*, Mississauga, Canada
30. CNSC, REGDOC-3.2.1, *Public Information and Disclosure*, Ottawa, Canada
31. CSA Group, CSA N288.8, *Establishing and implementing action levels for releases to the environment from nuclear facilities*, Mississauga, Canada
32. CSA Group, CSA N288.9, *Guidelines for design of fish impingement and entrainment programs at nuclear facilities*, Mississauga, Canada
33. CSA Group, CAN/CSA-ISO 14001, *Environmental management systems – Requirements with guidance for use*, Mississauga, Canada
34. CSA Group, CSA N288.4, *Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills*, Mississauga, Canada
35. CSA Group, CSA N288.6, *Environmental risk assessment at Class I nuclear facilities and uranium mines and mills*, Mississauga, Canada
36. CNSC, REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response*, Ottawa, Canada
37. CSA Group, CSA N1600:21, *General Requirements for Nuclear Emergency Management Programs*, Mississauga, Canada
38. CNSC, REGDOC-2.11.1, *Waste Management, Volume I: Management of Radioactive Waste*, Ottawa, Canada
39. CNSC, REGDOC-2.11.2, *Decommissioning*, Ottawa, Canada
40. CNSC, REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*, Ottawa, Canada
41. CNSC, REGDOC-2.12.1, *High-Security Facilities, Volume II: Criteria for Nuclear Security Systems and Devices* (prescribed), Ottawa, Canada
42. CNSC, REGDOC-2.12.2, *Site Access Security Clearance*, Ottawa, Canada
43. CNSC, REGDOC-2.2.4, *Fitness for Duty, Volume III: Nuclear Security Officer Medical, Physical, and Psychological Fitness*, Ottawa, Canada

44. International Atomic Energy Agency (IAEA), Nuclear Security Series (NSS) No. 35-G, *Security during the Lifetime of a Nuclear Facility*, Vienna, Austria

45. IAEA, *Treaty on the Non-Proliferation of Nuclear Weapons* (INFCIRC/140), Vienna, Austria

46. IAEA, *Agreement between the Government of Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*, Vienna, Austria

47. IAEA, *Protocol Additional to the Agreement between Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons* (INFCIRC/164/Add 1), Vienna, Austria

48. CNSC, REGDOC-2.13.1, *Safeguards and Nuclear Material Accountancy*, Ottawa, Canada

49. CNSC, REGDOC-2.13.2, *Import and Export*, Ottawa, Canada

50. CNSC, REGDOC-1.1.3, *Licence Application Guide: Licence to Operate a Nuclear Power Plant*, Ottawa, Canada

51. CNSC, REGDOC-3.1.1, *Reporting Requirements for Nuclear Power Plants*, Ottawa, Canada

52. CNSC, REGDOC-3.2.2, *Indigenous Engagement*, Ottawa, Canada

CNSC Regulatory Document Series

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Note: The regulatory document series may be adjusted periodically by the CNSC. Each regulatory document series listed above may contain multiple regulatory documents. Visit the CNSC's website for the latest list of regulatory documents.

L'organisme de réglementation
nucléaire du Canada

Installations dotées de réacteurs

Guide de présentation d'une demande de permis : Permis de construction d'une installation dotée de réacteurs

REGDOC-1.1.2, Version 2

Juin 2022

Commission canadienne de sûreté nucléaire
Canadian Nuclear Safety Commission

Canada

Guide de présentation d’une demande de permis : Permis de construction d’une installation dotée de réacteurs
Document d’application de la réglementation REGDOC-1.1.2, Version 2

Nº de cat. NNNNN
ISBN NNNNN

Also available in English under the title: Licence Application Guide: Licence to Construct a Reactor Facility, Version 2

Disponibilité du document
Les personnes intéressées peuvent consulter le document sur le site Web de la CCSN ou l’obtenir, en français ou en anglais, en communiquant avec la :

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Twitter : @CCSN_CNSC
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Historique de publication

Août 2011	RD/GD-369, *Guide de présentation d’une demande de permis : Permis de construction d’une centrale nucléaire*
Août 2019	REGDOC-1.1.2, *Guide de présentation d’une demande de permis : Permis de construction d’une centrale nucléaire*

Préface

Ce document d’application de la réglementation fait partie de la série de documents d’application de la réglementation de la CCSN intitulée Installations dotées de réacteurs, qui porte également sur l’adéquation du site et sur les guides de présentation de demandes de permis visant d’autres étapes du cycle de vie des installations dotées de réacteurs. La liste complète des séries figure à la fin de ce document et elle peut être consultée à partir du site Web de la CCSN.

Le document d’application de la réglementation REGDOC-1.1.2, *Guide de présentation d’une demande de permis : Permis de construction d’une installation dotée de réacteurs*, précise les exigences et fournit de l’orientation relatives à la présentation à la CCSN d’une demande de permis de construction d’une installation dotée de réacteurs au Canada et énumère l’information qui devrait figurer dans la demande.

Ce document en est rendu à sa deuxième version et il remplace le REGDOC-1.1.2, *Guide de présentation d’une demande de permis : Permis de construction d’une centrale nucléaire*, publié en août 2019. Il sera utilisé pour évaluer les demandes de permis visant des projets de nouvelles installations dotées de réacteurs. Lorsque la Commission aura accordé un permis, les mesures de sûreté et de réglementation décrites dans la demande de permis et les documents requis à l’appui de la demande feront partie intégrante du fondement d’autorisation.

La demande de permis soumise et les documents à l’appui, y compris les documents auxquels la demande fait référence, deviennent le dossier de sûreté de référence pour l’installation dotée de réacteurs.

Les renseignements qu’on exigera au moment de la demande de permis d’exploitation seront ajoutés à ce dossier de sûreté pour la construction. Le dossier de sûreté est ensuite tenu à jour pendant la durée de vie de l’installation pour refléter l’état et la condition actuels de l’installation dotée de réacteurs.

Compte tenu de la vaste gamme d’installations dotées de réacteurs – en particulier des petits réacteurs modulaires (PRM) et des réacteurs avancés – et du fait que les profils de risque des installations dotées de réacteurs varient considérablement en fonction des caractéristiques de l’activité ou de l’installation, le demandeur ou le titulaire de permis peut appliquer une approche tenant compte du risque, y compris une approche graduelle ou des solutions de rechange, dans la préparation de sa demande, conformément au REGDOC-1.1.5, *Renseignements supplémentaires pour les promoteurs de petits réacteurs modulaires* et au REGDOC 3.5.3, *Principes fondamentaux de réglementation*.

Pour en savoir plus sur la mise en œuvre des documents d’application de la réglementation et sur l’approche graduelle, consultez le REGDOC-3.5.3, *Principes fondamentaux de réglementation*.

Le terme « doit » est employé pour exprimer une exigence à laquelle le titulaire ou le demandeur de permis doit se conformer; le terme « devrait » dénote une orientation ou une mesure conseillée; le terme « pourrait » exprime une option ou une mesure conseillée ou acceptable dans les limites de ce document d’application de la réglementation; et le terme « peut » exprime une possibilité ou une capacité.

Aucune information contenue dans le présent document ne doit être interprétée comme libérant le titulaire de permis de toute autre exigence pertinente. Le titulaire de permis a la responsabilité de prendre connaissance de tous les règlements et de toutes les conditions de permis applicables et d’y adhérer.

Table des matières

Guide de présentation d’une demande de permis : Permis de construction d’une installation dotée de réacteurs

1. Introduction

1.1 Objet

Ce guide de présentation d’une demande de permis précise les exigences et fournit de l’orientation concernant la présentation d’une demande de permis de construction d’une installation dotée de réacteurs à la Commission canadienne de sûreté nucléaire (CCSN).

En suivant l’information fournie par ce document les demandeurs présenteront les renseignements nécessaires pour démontrer qu’ils sont compétents et qu’ils ont pris des mesures voulues pour préserver la santé et la sécurité des personnes, pour protéger l’environnement, pour maintenir la sécurité nationale et pour respecter les obligations internationales que le Canada a assumées.

1.2 Portée

Ce document sera utilisé par les demandeurs qui préparent une demande de permis de construction d’une nouvelle installation dotée de réacteurs proposée sur un site existant ou un nouveau site.

Compte tenu de la vaste gamme d’installations dotées de réacteurs – en particulier les petits réacteurs modulaires (PRM) et les réacteurs avancés – et du fait que les profils de risque des installations dotées de réacteurs varient considérablement, le demandeur ou le titulaire de permis peut appliquer une approche tenant compte du risque, y compris une approche graduelle ou des solutions de rechange, dans la préparation de sa demande, conformément au REGDOC-1.1.5, *Renseignements supplémentaires pour les promoteurs de petits réacteurs modulaires* [1] et au REGDOC-3.5.3, *Principes fondamentaux de réglementation* [2].

Les renseignements fournis dans le présent document n’empêchent pas les demandeurs de proposer d’autres façons de respecter une exigence. Toute solution de rechange proposée (y compris l’utilisation d’autres codes et normes) devrait tenir compte adéquatement de la complexité et des dangers des activités proposées, et le demandeur doit démontrer, en fournissant des renseignements à l’appui, que l’approche proposée lui permet d’atteindre un niveau de sûreté équivalent ou supérieur.

Ce guide de présentation couvre la demande initiale de permis de construction d’une installation dotée de réacteurs.

1.3 Législation pertinente

L’annexe A présente une liste des sections pertinentes de la *Loi sur la sûreté et la réglementation nucléaires* (LSRN) et de ses règlements en regard des sections correspondantes du présent guide de demande de permis.

1.4 Coordonnées du représentant de la CCSN

Un point de contact unique de la CCSN est chargé de travailler avec chaque titulaire ou demandeur de permis. Ce point de contact peut fournir au titulaire ou demandeur de permis des renseignements complémentaires ou des explications concernant l'information figurant dans le présent document.

Le demandeur devrait communiquer avec la CCSN avant de présenter la demande de permis et demander le nom et les coordonnées du représentant chargé de sa demande de permis d'exploitation. Pour de plus amples renseignements, voir la section 2.3, Processus d'autorisation.

Pour communiquer avec la CCSN, veuillez consulter son site Web.

2. Fondement d’autorisation, processus d’autorisation et présentation d’une demande de permis d’exploitation

La présente section fournit de l’information sur le fondement d’autorisation et le processus d’autorisation ainsi que sur la façon de remplir et de présenter la demande de permis d’exploitation.

La demande soumise et les renseignements qui y sont contenus constituent le dossier de sûreté de référence pour l’installation dotée de réacteurs et, par conséquent, feraient partie du fondement d’autorisation. Par conséquent, les demandeurs devraient savoir que ces renseignements doivent être contrôlés de la même manière que les autres parties du fondement d’autorisation et pourraient faire l’objet d’une vérification de la conformité par la CCSN. D’autres renseignements sur le fondement d’autorisation sont fournis dans le REGDOC-3.5.3, *Principes fondamentaux de réglementation* [2].

Le dossier de sûreté pour la construction comprend des exigences relatives à la préparation de l’emplacement, la conception et la construction de l’installation et la mise en service sans combustible.

Les demandeurs devraient tenir compte du fait que le dossier de sûreté de l’installation devra être mis à jour dans le cadre d’une demande de permis d’exploitation.

2.1 Contexte

En vertu du *Règlement sur les installations nucléaires de catégorie I*, les activités suivantes peuvent être autorisées :

- la préparation de l’emplacement en vue de la construction et de l’exploitation d’une installation dotée de réacteurs
- la construction d’une installation dotée de réacteurs
- l’exploitation d’une installation dotée de réacteurs
- le déclassement d’une installation dotée de réacteurs
- l’abandon d’une installation dotée de réacteurs

Dans la plupart des cas, les politiques, les programmes, les procédures et les mesures de sûreté et de réglementation mis au point à l’étape du cycle de vie de la préparation de l’emplacement continueront d’être utilisés et seront adaptés pour soutenir les activités de construction, de mise en service et d’exploitation future des installations incluses dans le permis.

Remarque : Il est possible de combiner des permis afin d’autoriser plusieurs activités. Pour de plus amples renseignements sur les demandes de permis combiné, voir la section 2.5.

Remarque 2 : Ce document s’applique à diverses technologies, y compris celles présentant des nouveautés, par exemple un combustible liquide. L’expression « dans la mesure du possible » est utilisée dans ce document, reconnaissant que toutes les exigences ne sont pas applicables à toutes les technologies dans leur état actuel. De plus, dans le cas d’une conception inédite, les renseignements peuvent ne pas être disponibles ou vérifiables avant la construction ou l’exploitation de l’installation. Lorsque l’expression « dans la mesure du possible » est utilisée, on s’attend à ce qu’une approche technique prudente soit démontrée.

2.2 Processus d’autorisation

Le REGDOC-3.5.1, *Processus d’autorisation des installations nucléaires de catégorie I et des mines et usines de concentration d’uranium* [3] clarifie le processus d’autorisation dans le contexte de la LSRN.

Le processus d’autorisation commence lorsque le demandeur dépose une demande de permis. Les demandeurs devraient s’assurer d’inclure des renseignements suffisamment détaillés afin de permettre le bon déroulement du processus d’autorisation. Outre les renseignements fournis dans le présent guide de présentation d’une demande de permis, la CCSN peut demander des renseignements additionnels en envoyant de l’orientation supplémentaire, propre à l’installation, au demandeur, avant le début du processus ou pendant le processus d’autorisation.

Les demandeurs peuvent communiquer avec le personnel de la CCSN tôt dans le processus (avant de soumettre leur demande), ce qui est fortement conseillé. Par exemple :

- le demandeur peut transmettre à la CCSN une lettre l’informant de la demande à venir afin de fournir quelques renseignements sur la portée et l’échéancier du projet proposé
- le fournisseur peut demander un examen de la conception de fournisseur préalable à l’autorisation, un service facultatif offert par la CCSN (à la demande d’un fournisseur) qui permet au personnel de la CCSN de formuler des commentaires dès le début du processus de conception en fonction de la technologie de réacteur que propose le fournisseur. Pour plus d’informations, consulter le REGDOC-1.1.5, *Renseignements supplémentaires pour les promoteurs de petits réacteurs modulaires* [1]

Remarque : Les renseignements fournis dans le présent document n’empêchent pas les demandeurs de proposer d’autres façons de respecter une exigence. Cependant, toute solution de rechange proposée (y compris l’utilisation de codes et normes distincts de ceux qui sont énumérés dans le présent guide de présentation d’une demande de permis) devrait tenir compte adéquatement des complexités et des dangers des activités proposées, et le demandeur doit démontrer (en fournissant des renseignements à l’appui et une comparaison des codes) que l’approche proposée lui permet d’atteindre un niveau de sûreté équivalent ou supérieur au niveau prescrit par les normes canadiennes.

2.3 Structure de la demande de permis

La demande peut être présentée dans l’une ou l’autre des langues officielles du Canada (français ou anglais).

Le présent guide de présentation d’une demande de permis décrit les mesures de sûreté et de réglementation attendues, organisées selon le cadre des domaines de sûreté et de réglementation (DSR) de la CCSN. La CCSN utilise les DSR comme sujets techniques pour évaluer, examiner, vérifier et rendre compte des exigences réglementaires et du rendement de toutes les installations et activités réglementées, comme suit (voir l'annexe B):

- Système de gestion
- Gestion de la performance humaine
- Conduite de l’exploitation
- Analyse de la sûreté
- Conception matérielle
- Aptitude fonctionnelle
- Radioprotection

- Santé et sécurité classiques
- Protection de l’environnement
- Gestion des urgences et protection-incendie
- Gestion des déchets
- Sécurité
- Garanties et non-prolifération
- Emballage et transport

Chacun de ces 14 DSR est subdivisé en domaines particuliers qui couvrent les sujets pris en compte pour réaliser une évaluation et un examen complets. Ce guide indique les domaines particuliers applicables à une demande initiale de permis de construction, mais il faut savoir que le personnel de la CCSN peut ajouter d’autres domaines au cours de l’examen de la demande.

Le demandeur pourrait choisir d’organiser les renseignements selon la structure de son choix. Cependant, il est encouragé à structurer sa demande de permis conformément au cadre des DSR de la CCSN afin de faciliter l’examen de sa demande par la CCSN. Si la demande ne respecte pas l’ordre et l’organisation des DSR présentés ci-dessus, le demandeur devrait fournir un document établissant la correspondance entre sa demande et le cadre des DSR de la CCSN. La demande peut comprendre des renvois vers des documents à l’appui offrant des renseignements plus détaillés.

2.4 Comment remplir la demande de permis

Il incombe au demandeur de s’assurer que la demande de permis contient suffisamment de renseignements pour répondre aux exigences suivantes :

- démontrer le respect de toutes les exigences réglementaires
- démontrer que le demandeur est compétent pour exercer l’activité autorisée et qu’il prendra les mesures voulues afin de préserver la santé, la sûreté et la sécurité des personnes et de protéger l’environnement

Au besoin, le demandeur peut fournir des renvois à d’autres sources de renseignements détaillés.

La demande devrait citer les documents d’application de la réglementation de la CCSN, ainsi que les codes et les normes que le demandeur entend mettre en œuvre (lesquels peuvent constituer une partie du fondement d’autorisation). Ces documents, codes et normes démontrent que le demandeur est apte à mettre en œuvre les mesures de sûreté et de réglementation.

Les demandeurs sont invités à discuter avec la CCSN de la version appropriée (date de publication et numéro de révision) de chaque document (document d’application de la réglementation, code ou norme) qu’ils prévoient d’appliquer. Le personnel de la CCSN peut aussi offrir une orientation supplémentaire pour d’autres documents dont le demandeur devrait tenir compte dans sa demande. Cette communication préalable à l’octroi du permis est en accord avec le REGDOC-3.5.1, *Processus d’autorisation des installations nucléaires de catégorie I et des mines et usines de concentration d’uranium* [3].

Une demande pour un permis de construction d’une installation dotée de réacteurs devrait contenir une liste des documents justificatifs de la demande, et indiquer clairement quels renseignements ont déjà été présentés à la CCSN. L’annexe D présente un exemple de format que les demandeurs peuvent utiliser pour établir la correspondance entre leurs documents justificatifs et le cadre des DSR.

Remarque : Si la version d’un document figurant dans les renseignements justificatifs a changé depuis la demande précédente, le demandeur doit fournir à la CCSN le nouveau numéro de version, une copie de la nouvelle version et un résumé des principaux changements que comporte la nouvelle version par rapport à la version précédemment révisée par le personnel de la CCSN. L’annexe E présente un exemple de format de liste des documents justificatifs.

Lorsqu’un sous-ensemble du matériel contenu dans un document justificatif traite des exigences réglementaires, les sections pertinentes devraient être clairement indiquées.

Demandes de permis combiné

Le demandeur peut demander un permis combiné autorisant plusieurs activités (par exemple, la préparation de l’emplacement combinée à la construction de l’installation dotée de réacteurs). Le demandeur peut proposer une combinaison d’activités, et le personnel de la CCSN examinera chaque demande de permis combiné en fonction des exigences réglementaires applicables.

Le demandeur doit satisfaire à toutes les exigences réglementaires relatives à toutes les étapes (par exemple, la construction et l’exploitation) couvertes par la demande de permis combiné.

Les demandeurs sont fortement encouragés à discuter d’une stratégie de demande de permis combiné avec la CCSN avant de soumettre une demande.

Soumission des documents de la demande de permis sur une période définie

La Commission exigera le dépôt d’une demande complète contenant tous les renseignements requis en vertu de la LSRN et de ses règlements applicables, comme précisé dans le cadre de réglementation, afin de prendre une décision pour la délivrance d’un permis de construction visant une installation dotée de réacteurs.

Compte tenu de l’ampleur des renseignements requis dans une demande de permis de construction d’une installation dotée de réacteurs, le demandeur peut fournir des documents justificatifs sur une période définie. Lorsqu’il utilise cette approche, le demandeur devrait fournir un calendrier détaillé des dates prévues de remise des documents avec sa demande de permis initiale.

Comme décrit dans le REGDOC-3.5.1, *Processus d’autorisation des installations nucléaires de catégorie I et des mines et usines de concentration d’uranium* [3], un permis de construction permet au titulaire de construire, de mettre en service et d’exploiter certains composants de l’installation dotée de réacteurs (par exemple, les systèmes de sûreté). Certains travaux de mise en service peuvent également être autorisés par la Commission, en délivrant un permis de construction, afin de démontrer que l’installation a été construite selon les plans approuvés, et que les systèmes importants pour la sûreté fonctionnent comme prévu. Le demandeur doit démontrer que la conception proposée pour l’installation respecte les exigences réglementaires et qu’elle permet l’exploitation en toute sûreté sur l’emplacement désigné pendant toute la durée de vie proposée.

2.5 Présentation de la demande de permis

Le demandeur devrait vérifier que la demande contient toute la documentation applicable, est datée et signée par la personne compétente et que tous les documents pertinents sont clairement indiqués et renvoient aux sections appropriées. Si la documentation est soumise sur une période définie, la demande devrait clairement indiquer comment les documents s’intègrent au calendrier des soumissions.

Tous les renseignements fournis sont assujettis à la *Loi sur l’accès à l’information* et de la *Loi sur la protection des renseignements personnels*. Le processus de délivrance de permis de la CCSN devrait être aussi transparent que possible. Le demandeur doit donc mentionner tout élément jugé confidentiel, et justifier en quoi il l’est.

La demande de permis est assujettie au *Règlement sur les droits pour le recouvrement des coûts de la Commission canadienne de sûreté nucléaire*. Par conséquent, le demandeur doit s'assurer que le paiement est joint. Pour obtenir plus de détails, veuillez communiquer avec le Groupe sur le recouvrement des coûts de la CCSN au 613-991-9791 ou sans frais au 1-888-229-2672 (option 2), ou par courriel à receivables-recevables@cnsc-ccsn.gc.ca.

Le demandeur pourrait plutôt choisir de présenter sa demande de permis en format imprimé (sur papier). Dans ce cas, il devrait présenter deux copies imprimées de la demande (signée et datée) à la Commission, à l’adresse suivante :

Greffe de la Commission
Commission canadienne de sûreté nucléaire
280, rue Slater, C.P. 1046, succursale B
Ottawa (Ontario) K1P 5S9

Comme l’exige l’article 27 du *Règlement général sur la sûreté et la réglementation nucléaires*, le demandeur ou le titulaire de permis doit conserver dans ses dossiers tous les renseignements portant sur le permis présenté à la Commission.

Il convient de noter que les renseignements réglementés (tels que les détails sur le programme de sécurité) peuvent seulement être transmis par des moyens protégés comme une lettre envoyée par la poste ou des dispositifs de stockage sécurisés. L’envoi de renseignements réglementés par courriel non chiffré est interdit. De l’orientation concernant la protection et la transmission de renseignements réglementés se trouve dans le REGDOC-2.12.3, *La sécurité des substances nucléaires : sources scellées et matières nucléaires de catégories I, II et III* [4]. La Politique sur la sécurité du gouvernement [5] du Secrétariat du Conseil du Trésor du Canada et les directives connexes (dont les liens figurent sur la page Web de la Politique) fournissent une orientation, des renseignements contextuels et des pratiques recommandées sur le traitement, la présentation et la transmission des biens considérés comme étant de nature délicate (comme des renseignements réglementés).

3. Renseignements généraux sur le demandeur

Un renvoi des dispositions législatives aux sections applicables est fourni à l’annexe A.

La demande de permis doit comprendre les renseignements généraux suivants afin de répondre à la réglementation, et devrait également comprendre quelques-uns des renseignements généraux additionnels indiqués ci-dessous. Le demandeur pourrait indiquer les renseignements et documents pertinents qui sont confidentiels.

3.1 Identification et renseignements au sujet des personnes-ressources

3.1.1 Nom et adresse professionnelle du demandeur

Le demandeur doit fournir son nom et son adresse professionnelle.

Le nom devrait être celui de la personne ou de l’organisation qui demande le permis, tel qu’il figure sur les documents de statut juridique (p. ex. les documents de preuve de constitution en personne morale).

L’adresse professionnelle devrait être l’adresse complète du siège social, y compris le nom de la rue, le numéro municipal, le numéro de route rurale (s’il y a lieu), la ville, la province ou le territoire, et le code postal. Un numéro de case postale ne constitue pas une adresse acceptable.

Le demandeur devrait aviser la Commission de tout changement apporté à ces renseignements dans les 15 jours suivant le changement.

3.1.2 Adresse postale

Le demandeur devrait indiquer l’adresse postale si elle diffère de l’adresse du siège social, y compris le nom complet de la rue, le numéro municipal, le numéro de route rurale, s’il y a lieu, la ville, la province ou le territoire et le code postal.

Si aucune adresse n’est indiquée, tout permis délivré en vertu de la demande sera envoyé à l’adresse du siège social. Une case postale constitue une adresse acceptable.

Le demandeur devrait aviser la Commission de tout changement apporté à ces renseignements dans les 15 jours suivant le changement.

3.1.3 Responsable de la demande

Le demandeur doit indiquer à la Commission les noms de toutes les personnes autorisées à le représenter dans le cadre de ses interactions avec la Commission. En outre, le demandeur doit aviser la Commission de tout changement apporté à ces renseignements dans les 15 jours suivant le changement.

Le demandeur devrait fournir une liste des noms, des postes et des coordonnées de toutes les personnes autorisées par le demandeur à traiter directement avec la CCSN.

Remarque : Le demandeur peut demander, pour des raisons de sécurité, que ces renseignements soient soumis à la confidentialité.

3.1.4 Preuve de statut juridique

Les demandeurs devraient fournir une preuve de statut juridique, comme une preuve de constitution en personne morale, un numéro de société ou encore une charte. Pour les demandes de renouvellement de permis de construction, une preuve révisée de statut juridique devrait être fournie si le nom original de l'organisation du demandeur a été modifié.

Si le demandeur est une société, la demande devrait comprendre les renseignements suivants :
- la dénomination sociale de la société
- le numéro de la société
- la date de constitution
- l'adresse postale (si elle diffère de l'adresse du siège social)

3.1.5 Preuve que le demandeur est le propriétaire du site ou qu'il a l'autorisation du propriétaire du site d'exercer les activités visées par le permis

Le demandeur doit fournir une preuve qu'il est le propriétaire du site ou qu'il a l'autorisation du propriétaire du site d'exercer les activités visées par le permis

3.1.6 Identification des personnes responsables de la gestion et du contrôle de l'activité autorisée

La demande doit contenir la structure de gestion de l'organisation du demandeur, dans la mesure où elle pourrait influer sur la capacité du demander à respecter la LSRN et ses règlements d'application, y compris la répartition interne des fonctions, des responsabilités et des autorités.

Le demandeur doit indiquer à la Commission les noms et titres des postes des personnes qui sont responsables de la gestion et du contrôle de l'activité autorisée et des substances nucléaires, de l'installation nucléaire, de l'équipement réglementé ou des renseignements réglementés, visés par le permis. Le demandeur doit aviser la Commission de tout changement apporté à ces renseignements dans les 15 jours suivant le changement.

Afin de répondre à ces exigences, le demandeur devrait fournir une liste sommaire de toutes les personnes responsables de la gestion et du contrôle de l'activité autorisée, y compris :
- le nom
- le titre du poste
- les coordonnées (courriel, téléphone, télécopieur)
- l'adresse postale (si elle diffère de l'adresse postale de l'entreprise) – indiquer le nom complet de la rue, le numéro municipal, le numéro de route rurale (s'il y a lieu), la ville, la province ou le territoire et le code postal

3.1.7 Personne-ressource pour la facturation des droits

Le demandeur devrait fournir les renseignements qui suivent concernant la personne responsable du paiement des droits de permis :
- le nom
- le poste
- les coordonnées (courriel, téléphone, télécopieur)
- l'adresse postale (si elle diffère de l'adresse postale de l'entreprise) – indiquer le nom complet de la rue, le numéro municipal, le numéro de route rurale (s'il y a lieu), la ville, la province ou le territoire et le code postal

3.1.8 Signataire autorisé

Le demandeur devrait fournir le nom, le titre et les coordonnées (l'adresse, l'adresse courriel et le numéro de téléphone) de la personne qui signe la demande en tant que signataire autorisé.

En apposant sa signature, le signataire autorisé indique qu'il comprend que toutes les déclarations et représentations faites dans la demande et dans les pages supplémentaires engagent le demandeur.

3.2 Installation et activités à autoriser

3.2.1 Période de validité du permis

Le demandeur devrait indiquer la période de validité du permis demandée (années ou mois).

La CCSN délivre des permis de durée variable. Cela permet de réglementer les installations dotées de réacteurs en tenant compte du risque, car la période de validité du permis peut être établie en fonction du rendement antérieur du titulaire de permis et des résultats des activités de vérification de la conformité.

3.2.2 Énoncé du but principal

Le demandeur doit fournir ce qui suit :
- des renseignements au sujet de l'activité à autoriser, et son utilisation
- une description de toute installation nucléaire, tout équipement réglementé ou tout renseignement réglementé, visé par le permis

La demande devrait inclure une description sommaire générale de l'installation dotée de réacteurs, des pratiques et des concepts de sûreté, et une comparaison de la conception et de la construction de l'installation dotée de réacteurs avec les normes modernes et les pratiques internationales en vigueur. Ce sommaire devrait permettre au lecteur d'avoir une vue d'ensemble de l'installation dotée de réacteurs sans qu'il soit nécessaire de se référer à d'autres sections de la demande de permis.

Ces renseignements pourraient être présentés sous forme sommaire, p. ex. une liste d'installations, d'équipement ou de renseignements.

3.2.3 Description du site

La demande doit contenir :
- une description du site où aura lieu l'activité à autoriser, y compris l'emplacement de toute zone d'exclusion et de toute structure dans cette zone
- des plans indiquant l'emplacement, le périmètre, les zones, les structures et les systèmes de l'installation nucléaire

3.2.4 Description de l'état du processus de demande de permis déjà en cours pour l'installation, s'il y a lieu

Lorsqu'une installation se trouvant sur le site est déjà autorisée par la CCSN ou qu'une demande de permis antérieure est en instance, le demandeur devrait fournir une description de l'état du processus de demande de permis.

3.2.5 Substances nucléaires et dangereuses

Le demandeur doit fournir :

- le nom, la quantité maximale et la forme de toute substance nucléaire visée par le permis
- le nom, la forme, les caractéristiques et la quantité de toute substance dangereuse qui pourrait se trouver sur le site pendant le déroulement de l’activité autorisée

Le demandeur devrait fournir le nom scientifique de chaque substance nucléaire et dangereuse.

Ces renseignements peuvent être fournis sous forme sommaire, p. ex. un tableau des substances nucléaires et dangereuses, avec les renseignements requis pour chaque substance.

3.3 Autres renseignements pertinents

3.3.1 Certificats et autres licences

Le demandeur devrait décrire le lien entre la présente demande et tout permis délivré auparavant (par exemple pour la préparation de l’emplacement) par la CCSN pour cette installation, y compris tout changement au dossier de sûreté qui faisait partie de tout permis précédent.

Le demandeur devrait citer en référence tout autre permis de la CCSN visant d’autres substances nucléaires ou activités nucléaires à l’installation dotée de réacteurs, p. ex. des permis pour les substances nucléaires et les appareils à rayonnement, des permis pour des services de dosimétrie et des permis d’importation ou d’exportation de substances nucléaires.

Le demandeur devrait également fournir un renvoi à tout permis ou certificat délivré par un organisme de réglementation pour ce site. Voici des exemples :

- un permis délivré en vertu de la *Loi sur les espèces en péril*, autorisant la personne à exécuter une activité ayant des répercussions sur une espèce sauvage inscrite dans la Loi, sur toute partie de son habitat essentiel ou sur la résidence de ses individus
- un permis d’un gouvernement provincial ou d’un territoire autorisant une activité qui pourrait avoir des répercussions sur une plante ou un animal en voie de disparition ou menacé et son habitat
- un certificat délivré par Pêches et Océans Canada autorisant une incidence sur l’habitat du poisson

3.3.2 Installations similaires

Le cas échéant, le demandeur devrait fournir une liste d’installations similaires qu’il possède ou exploite et qui ont déjà été évaluées et autorisées soit par la CCSN, soit par un organisme national étranger de réglementation. La demande devrait décrire les différences de conception notables entre l’installation proposée et toute installation similaire (par exemple, celles qui sont actuellement en exploitation ou en construction). La liste devrait comprendre les renseignements suivants:

- le nom de l’installation
- l’emplacement
- une description de l’installation

3.3.3 Renseignements justificatifs

Le demandeur doit inclure une description et les résultats des essais, analyses ou calculs effectués pour corroborer les renseignements compris dans la demande.

Si ces renseignements appuient le dossier de sûreté d’une installation ou corroborent les analyses des hypothèses formulées dans le rapport de sûreté, ils feront partie intégrante du fondement d’autorisation.

Ces renseignements devraient être aussi détaillés que possible. Dans le cas d’une demande de permis de construction, le demandeur devrait inclure une liste de tous les programmes d’essai en cours ou des analyses qui seront réalisées à une date ultérieure.

Voici quelques exemples de renseignements justificatifs :

- les résultats des programmes expérimentaux, des tests ou des analyses (p. ex. les résultats de tests sur le matériel de fabricants et les données de qualification, ainsi que les résultats de programmes expérimentaux sur le comportement du combustible)
- les documents qui ont été présentés à un organisme de réglementation étranger, reçus d’un tel organisme ou publié par un tel organisme

4. Politiques, programmes, processus et procédures de sûreté et autres mesures de sûreté et de réglementation

Structure et organisation de l’information

Le présent guide de présentation d’une demande de permis est organisé selon le cadre des DSR de la CCSN. Toutefois, le demandeur peut choisir d’organiser les renseignements selon la structure de son choix. Pour de plus amples renseignements sur la façon de structurer une demande de permis et l’organisation des renseignements, voir la section 2.4.

Approche graduelle tenant compte du risque

Le cadre de réglementation de la CCSN est principalement fondé sur l’expérience d’exploitation canadienne. Toutefois, la CCSN tient également compte d’autres types d’expérience d’exploitation, notamment l’expérience internationale de l’AIEA et les politiques d’autres organismes de réglementation nationaux. En vertu du cadre de la CCSN, conformément à une approche graduelle tenant compte du risque, les demandeurs peuvent proposer des solutions de rechange à celles suggérées dans le présent document d’application de la réglementation. Lorsqu’une solution de rechange est utilisée, le demandeur devrait fournir une justification adéquate. Pour des renseignements supplémentaires sur l’approche graduelle, voir le REGDOC-3.5.3, *Principes fondamentaux de réglementation* [2].

Les promoteurs et les demandeurs qui soumettent des demandes pour de petits réacteurs modulaires (PRM) devraient consulter le REGDOC-1.1.5, *Renseignements supplémentaires pour les promoteurs de petits réacteurs modulaires* [1].

4.1 Système de gestion

Le système de gestion est le cadre qui établit les procédures, les pratiques et les processus utilisés pour s’assurer qu’une organisation puisse accomplir toutes les tâches nécessaires à l’atteinte de ses objectifs de manière sécuritaire et uniforme.

Un renvoi des dispositions législatives aux sections applicables est fourni à l’annexe A.

4.1.1 Considérations générales

La demande devrait décrire le système de gestion qui a été ou qui sera mis en place pour préserver la santé et la sécurité et protéger l’environnement, ainsi qu’une une description de la structure de gestion de l’organisation.

4.1.2 Système de gestion

La demande devrait décrire le système de gestion et sa mise en œuvre, y compris la façon dont ses principales caractéristiques satisfont aux exigences applicables de la norme CSA N286-12, *Exigences relatives au système de gestion des installations nucléaires* [6], et tenir compte des renseignements contenus dans le REGDOC-2.1.1, *Système de gestion* [7].

La demande devrait définir le processus d’établissement, de mise en œuvre, d’évaluation et d’amélioration continue du système de gestion conformément aux principes énoncés dans la norme CSA N286-12 [6], avec suffisamment de détails pour garantir la sûreté.

La demande devrait démontrer ce qui suit :

- la structure du système de gestion est claire et comporte une hiérarchie logique des processus et procédures
- les processus requis sont définis, et les intrants et les extrants de chaque processus sont définis
- les processus et procédures sont clairs et concis

Si des processus ou des documents de mise en œuvre doivent être élaborés ultérieurement, la demande devrait fournir un calendrier et des jalons proposés pour ce travail.

La demande devrait décrire comment l’expérience d’exploitation provenant de sources internes et externes sera prise en compte et traitée.

4.1.3 Organisation

Dans la mesure du possible, la demande devrait décrire :

- la structure organisationnelle et les ressources du demandeur, y compris :
    - des plans pour s’assurer que des structures organisationnelles et des ressources adéquates seront en place
    - des organigrammes pour soutenir la structure de gouvernance
- les principes de conception utilisés pour développer la structure organisationnelle; tels que:
    - le nombre de niveaux hiérarchiques
    - la longueur des chaînes décisionnelles
    - l’étendue du contrôle de gestion
    - la politique d’utilisation des ressources contractuelles pour compléter la capacité interne

- la relation entre le demandeur et toute autre organisation avec laquelle des interactions importantes auront lieu, y compris :
  - des renseignements sur la façon dont les effets potentiels de chaque relation sur la gestion de la sûreté nucléaire seront reconnus et traités
  - la confirmation que le demandeur contrôle l'installation et les activités autorisées et qu'il ne sera pas soumis à une influence indue de la part d'une autre organisation
- l'approche adoptée pour garantir que le demandeur dispose d'une capacité suffisante de « client informé » permettant d'assurer la sûreté nucléaire et l'intégrité du dossier de sûreté
- la manière dont le demandeur conservera à l'interne une capacité de base suffisante pour :
  - gérer l'installation et les activités autorisées
  - maintenir une expertise pour la sûreté nucléaire, y compris les rôles de « client informé » lorsque l'expertise est cédée en sous-traitance et pour les articles achetés
- la façon dont l'organisation s'assurera qu'elle dispose d'un nombre suffisant de travailleurs qualifiés :
  - pour les postes liés à la sûreté nucléaire
- pour définir la stratégie en matière de ressources, afin :
  - de s'assurer que les ressources soient disponibles et qu'elles aient les compétences et l'expérience nécessaires à la conduite de l'activité autorisée
  - de cerner et d'atténuant le recours excessif à des domaines d'expertise rares ou uniques

La demande devrait décrire comment l'efficacité organisationnelle et le rendement en matière de sûreté seront mesurés, y compris l'utilisation d'indicateurs de rendement.

Pour de plus amples renseignements sur les responsabilités de l'organisation, voir l'annexe E du REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service* [8].

Supervision des travaux sous contrat

La demande devrait décrire comment le demandeur s'assurera que les travaux sous-traités sont exécutés selon le niveau de sûreté et de qualité requis, conformément aux documents REGDOC-2.3.1 et CSA N286-12 [6]. Les éléments à prendre en considération comprennent :

- veiller à ce que les fournisseurs relèvent et classent par catégorie tout écart par rapport aux exigences spécifiées, et transmettent ces écarts à l'autorité compétente
- s'assurer qu'il y ait des dispositions appropriées pour atténuer le risque que des articles contrefaits, frauduleux et suspects entrent dans la chaîne d'approvisionnement
- une description détaillée de la manière dont le demandeur assurera la responsabilité active et le contrôle de toutes les activités de construction afin de garantir qu'elles satisfont aux exigences réglementaires, techniques et de qualité

La demande devrait décrire :

- l'autorité responsable de la conception pour chaque phase du cycle de vie jusqu'à l'exploitation commerciale inclusivement (le cas échéant)
- les autres organisations ayant une responsabilité concernant la conception de parties précises de l'installation nucléaire

- la relation, y compris les autorités, responsabilités et rôles entre l’autorité responsable de la conception et :
  - le demandeur
  - les principales organisations de soutien technique
  - le maître d’œuvre et les sous-traitants
  - les organisations chargées des acquisitions
  - les organisations chargées de la mise en service et de l’exploitation
- les conditions préalables au transfert de l’autorité responsable de la conception à l’organisation exploitante, afin de garantir que l’entité devenant l’autorité responsable de la conception dispose des connaissances, de l’expertise et des ressources nécessaires pour assumer cette responsabilité

4.1.4 Gestion de la configuration et du changement

La demande devrait décrire les mesures visant à établir et à maintenir la configuration durant toute la durée de vie de l’installation. Les éléments à prendre en considération comprennent :

- démontrer le respect de :
  - la section 7 du REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service* [8]
  - la norme CSA N286.10, *Gestion de la configuration des installations de réacteurs à haute puissance* [9]
- assurer la compatibilité des technologies de gestion de l’information entre les organisations participantes pour ce qui est du transfert, du partage et du stockage des données de configuration
- prévoir des ententes d’interface entre les organisations participantes pour ce qui est des examens, de l’approbation, de la publication, des changements de conception, des changements techniques sur le terrain et des non-conformités
- aviser la CCSN lorsque des changements de configuration affectent ou affecteront la conception et le fondement d’autorisation soumis
- obtenir, au besoin, les approbations des autorités compétentes

4.1.5 Culture de sûreté

La demande devrait démontrer l’approche du demandeur pour ce qui est de favoriser une saine culture de sûreté, conformément aux documents suivants :

- CSA N286-12, *Exigences relatives au système de gestion des installations nucléaires* [6]
- REGDOC-2.1.2, *Culture de sûreté* [10]
- REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service* [8]

4.2 Gestion de la performance humaine

Le DSR Gestion de la performance humaine englobe les activités qui permettent d’atteindre une performance humaine efficace grâce à l’élaboration et à la mise en œuvre de processus qui garantissent que les employés sont présents en nombre suffisant dans les secteurs de travail pertinents et qu’ils possèdent les connaissances, les compétences, les procédures et les outils dont ils ont besoin pour exécuter leurs tâches en toute sécurité.

Un renvoi des dispositions législatives aux sections applicables est fourni à l’annexe A.

4.2.1 Considérations générales

En ce qui concerne les activités de construction visées dans la demande de permis, le demandeur doit documenter l’approche graduelle qu’il prévoit de mettre en œuvre :

- se conformer aux exigences et à l’orientation du *Règlement sur les installations nucléaires de catégorie I* et du REGDOC-2.2.1, *Facteurs humains* [11], en ce qui concerne le programme de performance humaine. La demande devrait inclure une description de tous les efforts substantiels déployés à ce jour
- se conformer aux exigences et à l’orientation du REGDOC-2.2.4, *Aptitude au travail : Gérer la fatigue des travailleurs* [12] et du REGDOC-2.2.4, *Aptitude au travail, tome II : Gérer la consommation d’alcool et de drogues* [13]. La demande devrait inclure une description de tous les efforts substantiels déployés à ce jour

La demande devrait décrire les qualifications, les aptitudes et les compétences requises par les travailleurs à l’installation et indiquer le nombre de travailleurs nécessaires à l’installation.

La description devrait comprendre les mesures prévues pour veiller à ce que les travailleurs soient présents en nombre suffisant dans tous les secteurs de travail, qu’ils possèdent les connaissances et les compétences nécessaires et qu’ils ont accès aux procédures et aux outils dont ils ont besoin pour exécuter leurs tâches en toute sécurité.

La demande devrait décrire le processus de planification des effectifs, y compris les mesures prévues pour le transfert de connaissances, de manière à ce que les travailleurs soient embauchés et formés pour remplir chaque rôle clé au sein de l’organisation.

4.2.2 Formation du personnel

La demande doit décrire un système de formation qui est conforme au REGDOC-2.2.2, *Formation du personnel* [14].

Le demandeur devrait décrire les exigences en matière de qualification et de formation du personnel participant aux activités de conception, ainsi que le programme et le calendrier proposés pour recruter, former et accréditer les travailleurs qui effectueront des tâches de construction, de mise en service, d’exploitation et d’entretien.

Le demandeur devrait expliquer comment il s’assurera que le personnel participant aux activités de construction et de mise en service possède la formation, les qualifications et les compétences appropriées pour exécuter les tâches qui leur sont assignées, et ce, de façon efficace et sécuritaire. Pour de plus amples renseignements, voir les sections 3.3.3 et 8.2 du REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service* [8].

4.2.3 Accréditation du personnel

En vue de l’autorisation ou de l’accréditation du personnel occupant des postes désignés, le demandeur devrait fournir :

- un document de référence ou un résumé du système de gestion et du concept d’exploitation proposés en ce qui concerne les aspects suivants :
  - les rôles et responsabilités du personnel qui fait partie de l’effectif minimal
  - les rôles et responsabilités du personnel occupant des postes qui concernent directement la sûreté, y compris, sans s’y limiter, les postes essentiels et les postes importants sur le plan de la sûreté
  - l’étendue de l’intervention humaine dans les opérations dans des conditions normales, anormales et d’urgence, y compris l’impact potentiel des actions et des décisions humaines sur la sécurité des travailleurs, du public et de l’environnement
- une vue d’ensemble de toute installation ou tout système de simulateur proposé et la manière dont cette installation ou ce système de simulateur sera utilisé pour soutenir la formation du personnel
- un aperçu du calendrier de mise en œuvre des programmes relatifs à la sélection, à la formation et à la qualification des opérateurs de réacteur et, le cas échéant, des chefs de quart de salle de commande

4.2.4 Organisation du travail et conception des tâches

Le demandeur devrait démontrer que, dans la mesure du possible, les niveaux de dotation en personnel sont adéquats pour appuyer la construction et la mise en service sécuritaires de l’installation dotée de réacteurs.

4.3 Conduite de l’exploitation

Le DSR Conduite de l’exploitation comprend un examen global de la mise en œuvre des activités autorisées ainsi que des activités qui permettent un rendement efficace.

Un renvoi des dispositions législatives aux sections applicables est fourni à l’annexe A.

4.3.1 Considérations générales

La demande doit comprendre des renseignements sur la façon dont l’installation nucléaire respectera toutes les lois provinciales applicables ou autres codes et normes applicables.

La demande doit décrire les programmes et leurs mesures, les politiques, les méthodes et les procédures proposées pour la construction et la mise en service de l’installation nucléaire.

Pour ce qui est des activités réalisées en vertu du permis de construction, le demandeur doit caractériser les risques pour la santé, la sécurité et l’environnement que pourraient rencontrer les travailleurs et le public. Le demandeur doit décrire la stratégie qu’il entend appliquer (y compris l’élaboration de mesures d’atténuation) lorsque des risques additionnels pour la santé et la sécurité du public sont découverts et qui n’ont pas été prévus pendant le processus de demande de permis. Ces risques s’apparentent généralement aux risques associés activités de construction sur les grands projets de construction conventionnels. Voici quelques exemples :

- les dangers liés au bruit, principalement aux activités de dynamitage et au fonctionnement de la machinerie lourde
- la poussière provenant de l’enlèvement et du déplacement des morts-terrains et des roches
- les dangers chimiques liés aux déversements de carburant et aux produits chimiques classiques utilisés pendant la construction de la structure
- les dangers mécaniques dus aux travaux d’excavation, de terrassement, à la construction de routes, etc.
- les vibrations du sol et les risques liés à la projection de roches en raison des activités de dynamitage
- les dangers électriques liés à la mise en place d’une infrastructure électrique pour la construction
- le transport des matériaux de construction et l’installation connexe des composants internes

Pour de plus amples renseignements sur la façon dont le demandeur peut démontrer comment il assumera la responsabilité globale pour la construction et la mise en service de l’installation dotée de réacteurs, consulter le REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service* [8] :

- la section 3.1 traite des responsabilités du titulaire de permis concernant la construction de l’installation dotée de réacteurs
- la section 8.1 traite des responsabilités de l’organisation pendant la mise en service sous la direction générale du titulaire de permis

4.3.2 Procédures

La demande devrait décrire les dispositions qui seront mises en œuvre pour la construction et la mise en service de l’installation dotée de réacteurs conformément au REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service* [8]. Cette description devrait comprendre les dispositions prises pour faciliter la surveillance réglementaire des phases de construction et de mise en service, des essais et des points d’arrêt pour des activités autorisées précises.

La demande devrait également décrire les programmes et les processus mis en place pour gérer les fonctions importantes pour la sûreté. Bon nombre de ces programmes et processus seront entrepris pendant la construction et la mise en service de l’installation dotée de réacteurs et seront entièrement terminés lorsque l’exploitation normale commencera. Le début de l’applicabilité et le point auquel la mise en œuvre sera complète devraient être indiqués dans la description de chaque processus. Si le demandeur prévoit mettre en œuvre un programme ultérieurement à l’appui de l’exploitation normale de l’installation, il devrait fournir suffisamment de renseignements démontrant comment l’élaboration et la mise en œuvre du programme sont prévues, y compris les calendriers et les jalons applicables.

Programme de construction

La demande doit :

- inclure des renseignements sur la façon dont le demandeur exercera sa responsabilité globale pour la conduite des activités de construction
- décrire le programme de construction qui sera mis en œuvre

Le programme de construction devrait être bien planifié, contrôlé et adéquatement documenté, et il devrait couvrir les points suivants :

- l’approvisionnement, la construction, la fabrication, l’homologation, l’identification, le transport et l’entreposage
- la conception et l’ingénierie, ou les essais des ouvrages, systèmes ou composants (OSC), soit sur le site de construction, soit aux points de fabrication qui ne se trouvent pas sur le site
- les activités qui seront réalisées (elles doivent être décrites sous forme d’unités gérables)

La demande devrait décrire les processus et procédures qui serviront à confirmer que les OSC de l’installation dotée de réacteurs seront construits conformément à leurs spécifications de conception et aux exigences réglementaires, codes et normes applicables. La demande devrait également comporter une liste des essais fonctionnels pendant la construction et des essais de mise en service qui sont prévus à différentes étapes de la construction.

Construction des structures en béton

La demande devrait décrire le processus global qui sera suivi pour réaliser de façon satisfaisante les ouvrages en béton pendant la phase de construction. La demande devrait également fournir suffisamment de renseignements pour permettre une compréhension claire de la façon dont les ouvrages en béton seront construits, comment leur qualité sera contrôlée et assurée, et quelles preuves objectives seront recueillies pour démontrer que les spécifications relatives au rendement de la conception pour les bâtiments et les structures seront vérifiées.

Voici quelques exemples d'éléments à prendre en compte :

- l'homologation, l'identification et le contrôle des matériaux, la mise en lots, le mélange des constituants de béton, la cure du béton et la préparation des joints de construction
- les mesures visant à contrôler la qualité de la construction, y compris les inspections et les essais requis
- les processus pour les travaux d'injection de coulis
- le contrôle des coffrages dans les structures finales, ainsi que la disposition des tiges et autres dispositifs de renfort de coffrages afin de s'assurer que les structures respectent les dessins de conception
- le contrôle des températures du béton et, au besoin, l'utilisation d'un préchauffage ou d'un prérefroidissement des constituants du béton, et la prévention des chocs thermiques
- les exigences de fabrication et de mise en place des systèmes de renforcement des enceintes de confinement en béton afin de respecter les dessins pertinents de conception et de construction
- les procédures d'installation des armatures de précontrainte

Pour de plus amples renseignements, voir les documents suivants :

- REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service* [8]
- Norme CSA A23.1:19/CSA A23.2:19, *Concrete materials and methods of concrete construction / Test methods and standard practices for concrete* [15]

Construction et installation des composants métalliques

La demande devrait décrire les mesures prises pour contrôler la qualité de la construction et de l'installation des composants métalliques de l'installation dotée de réacteurs, y compris les inspections et les essais auxquels ils seront soumis.

La demande devrait également indiquer les codes, normes et spécifications techniques concernant les composants métalliques qui seront utilisés pendant la construction et l'installation. Les matériaux utilisés pour la soudure, la fabrication, la construction et l'installation devraient être identifiés et homologués selon les codes et normes applicables.

La demande devrait indiquer les processus et accréditations concernant les examens, les inspections en atelier, les inspections sur le terrain et les essais.

Programme de mise en service

La demande devrait inclure un plan et un calendrier pour l'élaboration, la vérification, la validation et la mise en œuvre des programmes et procédures de mise en service qui seraient réalisés en vertu du permis de construction.

La demande devrait décrire comment le programme de mise en service confirmera que l'équipement, les OSC et l'installation dotée de réacteurs fonctionneront en tant qu'unité intégrée conformément aux spécifications de conception et aux exigences réglementaires.

La demande devrait décrire, en termes généraux, le programme établi pour la mise en œuvre des activités de mise en service jusqu'au premier chargement du combustible dans le réacteur, mais sans inclure ce chargement. Ce programme devrait confirmer que les OSC de l'installation dotée de réacteurs ont été installés correctement et fonctionneront selon leurs spécifications de conception, et que l'installation intégrée dotée de réacteurs réalisera toutes les fonctions de sûreté nécessaires conformément aux exigences de conception. Ce programme est particulièrement important pour les caractéristiques de conception qui sont nouvelles ou d'un genre inédit.

La demande devrait décrire le contrôle chimique des SSC pendant la construction et la mise en service, conformément à la section du REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service* [8], traitant de la protection des structures, systèmes et composants importants pour la sûreté. La demande devrait décrire comment le contrôle chimique approprié et sa surveillance sont exécutés pour les SSC ou les matériaux de construction dont les caractéristiques doivent être établies sur l'emplacement, ou pendant les activités menées dans le cadre du permis de construction.

La demande devrait décrire le programme d'entretien et d'inspection qui sera mis en œuvre pendant la durée du permis de construction afin de prévenir la détérioration des SSC importants pour la sûreté une fois qu'ils ont été installés, construits ou mis en service et de satisfaire aux exigences pertinentes du REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service* [8]. Les exigences pertinentes du REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service* [8] comprennent notamment :

- la section 3 sur la gestion et l'organisation
- la section 5.5 sur la protection des systèmes, des structures et des composants importants pour la sûreté
- la section 8.1 sur les responsabilités organisationnelles
- l'annexe E qui décrit les responsabilités organisationnelles recommandées

4.4 Analyse de la sûreté

Le DSR Analyse de la sûreté comprend la tenue à jour de l’analyse de la sûreté qui appuie le dossier général de sûreté de l’installation. Une analyse de la sûreté est une évaluation systématique des dangers possibles associés au fonctionnement d’une installation ou à la réalisation d’une activité proposée. L’analyse de la sûreté sert à examiner les mesures et les stratégies de prévention qui visent à réduire les effets de ces dangers.

Un renvoi des dispositions législatives aux sections applicables est fourni à l’annexe A.

4.4.1 Considérations générales

La demande doit comporter un rapport préliminaire d’analyse de la sûreté (RPAS) pour l’installation dotée de réacteurs. Le RPAS devrait comprendre une analyse déterministe de la sûreté , une étude probabiliste de sûreté (EPS) et une analyse des dangers qui sont proportionnelles au niveau de conception. La demande devrait démontrer que tous les niveaux de défense en profondeur sont pris en compte, et devrait également confirmer que la conception de l’installation est en mesure de respecter les objectifs de sûreté et les critères d’acceptation des doses applicables.

Chaque fois qu’une action d’un opérateur est prise en compte, la demande devrait démontrer que les opérateurs disposeront de renseignements fiables, de suffisamment de temps pour exécuter les actions requises et de procédures documentées à suivre, et qu’ils auront reçu la formation nécessaire.

Les analyses de la sûreté incluses dans le RPAS devraient se dérouler parallèlement au processus de conception, avec itération entre les deux activités. Le demandeur devrait décrire la méthode utilisée pour faire progresser les analyses de la conception et de la sûreté. La portée et le niveau de détail des analyses devraient augmenter à mesure que la conception progresse, de sorte que les analyses de sûreté finales reflètent la conception finale de l’installation dotée de réacteurs. La demande devrait démontrer que les processus de conception, d’approvisionnement, de fabrication, de qualification de l’équipement, de construction, d’installation et de mise en service sont pris en compte dans les analyses de la sûreté afin de s’assurer que le but de la conception sera réalisé dans l’installation dotée de réacteurs « telle que construite ».

Le demandeur devrait également décrire les programmes et les mesures de surveillance mis en place pour s’assurer que les analyses de la sûreté sont réalisées par un personnel techniquement qualifié et convenablement formé, et qu’elles sont conformes aux programmes du système de gestion qui soutiennent les analyses de la sûreté et aux principes de « client informé ». Les renseignements devraient démontrer que tous les entrepreneurs et sous-traitants prenant part aux analyses de la sûreté sont qualifiés pour réaliser leurs activités respectives.

4.4.2 Événements initiateurs hypothétiques

L’analyse de la sûreté doit indiquer les événements initiateurs hypothétiques (EIH) à l’aide d’une méthode systématique (p. ex. l’analyse des modes de défaillances et des effets). La portée et la classification des EIH figurant dans la demande doivent satisfaire aux exigences énoncées dans les documents suivants:

- REGDOC-2.4.1, *Analyse déterministe de la sûreté* [16]
- REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]

Pour de plus amples renseignements concernant les événements externes, consulter le REGDOC-1.1.1, *Évaluation et préparation de l’emplacement des nouvelles installations dotées de réacteurs* [18].

Les renseignements fournis devraient démontrer que tous les événements prévisibles pouvant entraîner des conséquences graves ou dont la fréquence est grande sont anticipés et pris en considération.

Dans le cas d’un site comportant plusieurs tranches, la demande devrait décrire comment les analyses de la conception et de la sûreté ont pris en compte le risque que des dangers précis touchent simultanément plusieurs tranches du site.

4.4.3 Analyse déterministe de la sûreté

Dans la mesure du possible et en fonction de la quantité de renseignements sur la conception, la demande doit comprendre une analyse déterministe de la sûreté réalisée conformément au REGDOC-2.4.1, *Analyse déterministe de la sûreté* [16]. Le niveau de prudence de chaque analyse déterministe de la sûreté devrait correspondre à la catégorie d’événement analysée et aux objectifs de l’analyse.

La demande devrait fournir les critères d’acceptation des doses.

La demande devrait également décrire la couverture de déclenchement et les valeurs seuils de déclenchement.

L’analyse déterministe de la sûreté devrait démontrer que les limites de dose applicables sont respectées.

Pour les accidents de dimensionnement (AD), la demande devrait démontrer qu’il existe un niveau de confiance élevé indiquant que les systèmes qualifiés (indiqués dans le REGDOC-2.4.1 [16]) fonctionnant en mode autonome peuvent atténuer les conséquences de l’événement.

4.4.4 Analyse des dangers

Dans la mesure du possible et en fonction de la quantité de renseignements sur la conception, le demandeur doit fournir une analyse des dangers ayant été effectuée conformément aux exigences des documents suivants :

- REGDOC-2.4.1, *Analyse déterministe de la sûreté* [16]
- REGDOC-2.4.2, *Études probabilistes de sûreté (EPS) pour les centrales nucléaires* [19]
- REGDOC-1.1.1, *Évaluation et préparation de l’emplacement des nouvelles installations dotées de réacteurs* [18]

La demande devrait décrire l’analyse de tous les dangers potentiels (internes et externes) naturels et causés par l’homme. Voici des exemples :

- dangers externes naturels : séismes, sécheresses, inondations, vents violents, tornades, augmentations subites des niveaux d’eau et conditions météorologiques extrêmes
- dangers externes causés par l’homme : dangers relevés dans l’évaluation du site comme les écrasements d’avion et les collisions de navires
- dangers internes : feux, inondations, projectiles de turbine, accidents de transport sur le site et rejets de substances toxiques provenant des installations d’entreposage sur le site

La demande devrait décrire l’analyse de toute combinaison possible de dangers externes. Elle devrait aussi tenir compte de l’interaction potentielle entre les dangers externes et internes, comme un événement externe qui pourrait entraîner des incendies ou des inondations à l’interne ou qui pourrait causer des projectiles.

Dans le cas d’un site comportant plusieurs tranches, la demande devrait décrire comment le risque de dangers précis touchant simultanément plusieurs tranches a été pris en compte.

Remarque : Les dangers externes sont différents des événements initiateurs hypothétiques.

4.4.5 Étude probabiliste de sûreté

Dans la mesure du possible et en fonction de la quantité de renseignements sur la conception, la demande doit comprendre une étude probabiliste de sûreté (EPS) réalisée conformément aux exigences spécifiées dans le REGDOC-2.4.2, *Études probabilistes de sûreté (EPS) pour les centrales nucléaires* [19].

La demande devrait décrire comment les résultats de l’EPS ont été utilisés pour déterminer les vulnérabilités de l’installation dotée de réacteurs. En se basant sur l’EPS, la demande devrait également :

- fournir des renseignements qui vérifient que des procédures d’exploitation d’urgence seront adéquates pendant la mise en service et l’exploitation future
- décrire comment les résultats de l’EPS donnent un aperçu du programme de gestion des accidents graves, et comment ces résultats respectent les objectifs de sûreté
- décrire comment l’EPS pourrait être utilisée, pendant la mise en service et l’exploitation future, afin d’indiquer les systèmes pour lesquels des améliorations à la conception ou des modifications aux procédures d’exploitation pourraient réduire la probabilité d’occurrence d’un accident grave ou en atténuer les conséquences

4.4.6 Analyse des accidents graves

Dans la mesure du possible et en fonction de la quantité de renseignements sur la conception, le demandeur doit démontrer qu’une analyse des accidents graves a été effectuée conformément aux exigences des documents suivants :

- REGDOC-2.4.1, *Analyse déterministe de la sûreté* [16]
- REGDOC-2.4.2, *Études probabilistes de sûreté (EPS) pour les centrales nucléaires* [19]

Le demandeur devrait également démontrer que les résultats de l’analyse des accidents graves sont utilisés dans l’élaboration d’un programme de gestion des accidents, conformément au REGDOC-2.3.2, *Gestion des accidents* [20]. Le format et le contenu des analyse des accidents graves devraient correspondre à la présentation des analyses des incidents de fonctionnement prévus et des événements de dimensionnement. En outre, la demande devrait :

- définir l’objectif ou les critères d’acceptation particuliers pour l’analyse des accidents graves
- comprendre un exposé des défaillances hypothétiques additionnelles prévues dans le scénario d’accident, assorti des motifs de leur sélection
- résumer les principaux résultats des analyses selon les critères d’acceptation particuliers, et indiquer comment les critères d’acceptation sont respectés

La demande devrait fournir des renseignements détaillés sur l’analyse afin d’identifier les accidents susceptibles d’entraîner des dommages importants au cœur ou des rejets de matières radioactives hors du site (accidents graves). De plus, les renseignements présentés devraient décrire l’évaluation qui a été faite sur la capacité des caractéristiques de conception complémentaires de l’installation dotée de réacteurs de répondre aux critères de conception, conformément au REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17].

La demande devrait démontrer la capacité de la conception à atténuer certains accidents graves. Le demandeur devrait expliquer le choix des accidents graves qui doivent être analysés et justifiés, en indiquant si le choix a été fondé sur une EPS ou sur une autre analyse des défauts visant à cerner les vulnérabilités possibles de l’installation dotée de réacteurs. En outre, le demandeur devrait décrire, expliquer et justifier l’approche qui a été adoptée.

Les accidents graves sont habituellement des séquences comportant plus d’une défaillance (à moins d’avoir été pris en compte dans l’AD à l’étape de la conception), comme une panne générale de courant de l’installation dotée de réacteurs, des événements de dimensionnement accompagnés du rendement affaibli d’un système de sûreté et des séquences qui provoquent le contournement de l’enceinte de confinement. La demande devrait décrire comment l’analyse :

- a recours aux modèles et aux hypothèses de la meilleure estimation
- crédite le fonctionnement et le rendement réalistes des systèmes au-delà des fonctions initiales prévues, y compris les systèmes sans importance pour la sûreté
- crédite les interventions réalistes des opérateurs

Si cela n’est pas possible, des hypothèses raisonnablement prudentes devraient être formulées qui prennent en compte les incertitudes liées à la compréhension des processus physiques modélisés.

S’il y a lieu, la demande devrait comprendre une explication de l’analyse effectuée pour les séquences d’accidents graves et une description des résultats utilisés dans l’élaboration des programmes de gestion des accidents et dans la planification de la préparation d’urgence pour l’installation dotée de réacteurs.

4.4.7 Sommaire de l’analyse

Dans la mesure du possible et en fonction de la quantité de renseignements sur la conception, la demande devrait inclure des renseignements sur l’examen intégré de la conception de l’installation dotée de réacteurs et de la sûreté opérationnelle réalisé en vue de confirmer que la conception atteint les objectifs.

4.4.8 Atténuation des conséquences des événements

Dans la mesure du possible et en fonction de la quantité de renseignements sur la conception, la demande doit comprendre les résultats d’un examen des mesures d’atténuation des événements, conformément aux exigences du REGDOC-2.3.2, *Gestion des accidents* [20].

4.5 Conception matérielle

Le DSR Conception matérielle est lié aux activités qui ont une incidence sur l’aptitude des structures, systèmes et composants à respecter et à maintenir le fondement de leur conception, compte tenu des nouvelles informations qui apparaissent au fil du temps et des changements qui surviennent dans l’environnement externe.

Un renvoi des dispositions législatives aux sections applicables est fourni à l’annexe A.

4.5.1 Considérations générales

La demande devrait comprendre une description générale de la conception matérielle théorique globale de l’installation dotée de réacteurs, des pratiques de conception et des concepts en matière de sûreté. La demande devrait également décrire l’approche suivie pour la conception générale des OSC. La conception devrait être décrite de manière suffisamment détaillée pour que des examens indépendants puissent être effectués, comme indiqué dans la section traitant de l’évaluation de la sûreté du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17].

La demande devrait comprendre une comparaison entre la conception, la construction, la mise en service et l’exploitation de l’installation dotée de réacteurs et les principales normes et pratiques internationales modernes.

Pour toutes les technologies de réacteur, la demande devrait, dans la mesure du possible, tenir compte de l’information contenue dans la présente section. Toute autre approche sélectionnée ou toute autre mesure d’atténuation appliquée devrait être indiquée.

La demande peut renvoyer à des renseignements déjà soumis (p. ex. dans une demande de permis en vue de la préparation de l’emplacement). L’ensemble des documents qui satisfont aux exigences énoncées dans la présente section ne devrait être présenté qu’une seule fois (pour la demande initiale), avec peu de modifications subséquentes.

La demande devrait démontrer que l’exploitation normale peut être effectuée de manière sûre, de sorte que les doses de rayonnement auxquelles sont exposés les travailleurs et les membres du public, ainsi que tout rejet prévu de substances nucléaires et dangereuses en provenance de l’installation dotée de réacteurs, respecteront les limites autorisées.

En outre, la demande devrait démontrer que les limites de doses de rayonnement, les limites de rejets de substances nucléaires et dangereuses et les objectifs de sûreté sont respectés.

La demande devrait également décrire les programmes et les mesures de surveillance mis en place pour s’assurer que la conception est réalisée par un personnel techniquement qualifié et convenablement formé, et qu’elle est conforme au programme du système de gestion qui soutient la conception et aux principes de « client informé ». Ces renseignements devraient démontrer que tous les entrepreneurs et sous-traitants prenant part à la conception sont qualifiés pour réaliser leurs activités respectives.

La demande devrait fournir des renseignements sur les programmes de soutien qui démontrent que la conception :

- tient compte de l’expérience d’exploitation (OPEX) et des derniers avancements en matière de recherche et de développement
- maintient ses caractéristiques tout au long de son cycle de vie à l’intérieur des limites prises en compte dans l’analyse de la conception et de la sûreté
- est résistante aux effets des événements de cause commune et, dans la mesure du possible, aux accidents graves
- garantit que l’installation dotée de réacteurs demeurera fiable et robuste
- facilite des activités efficaces d’entretien, d’exploitation et de déclassement

Description des ouvrages, systèmes et composants

Pour chaque OSC, la demande devrait décrire en détail les caractéristiques, les principaux composants et les exigences de dimensionnement (p. ex. les exigences fonctionnelles et les exigences de rendement liées à la définition du dimensionnement), y compris les renseignements suivants :

- l’objectif du système et la manière dont il est lié à l’ensemble de l’installation dotée de réacteurs
- une description de la conception du système et de ses principaux composants, de même que leur configuration et leurs modes de fonctionnement, y compris :
  - les exigences fonctionnelles (p. ex. les demandes hypothétiques et le rendement exigé pour tous les états de l’installation dotée de réacteurs)
  - les événements de dimensionnement, qui contribuent à déterminer les exigences de conception du système, et quelles limites de conception sont déterminées par quels événements
  - les interfaces avec d’autres systèmes
  - les mesures prises pour réduire au minimum la production de déchets nucléaires et dangereux au moyen de la conception
  - toute autre exigence particulière imposée par les règlements, les codes et les normes applicables
- la documentation à l’appui de la conception et tout document connexe, comme les exigences relatives à la conception du système
- les programmes transversaux, notamment :
  - la classification des codes pour la sûreté et l’enveloppe de pression
  - l’assurance de la qualité
  - les exigences sismiques et relatives à l’équipement
  - les exigences relatives aux facteurs humains
  - les exigences élaborées pour assurer la conformité avec les autres systèmes et l’analyse de la sûreté
  - les objectifs de fiabilité de la conception pour les systèmes et les principaux composants
  - les exigences qui donnent suite à la rétroaction sur l’exploitation
- les éléments détaillés de la conception des systèmes, y compris, s’il y a lieu :
  - les schémas de conception pour les circuits de fluides
  - les schémas unifilaires des systèmes électriques, d’instrumentation et de contrôle
  - les schémas fonctionnels pour les systèmes logiques
  - l’emplacement physique et les dessins isométriques

  - les limites des systèmes en tant que fonction d'un mode d'exploitation
  - les limites du confinement, y compris les exigences en matière d'isolation
  - la classification des codes et les limites de classification pour les systèmes et les composants sous pression
  - les catégories et les limites sismiques et leurs interfaces avec les systèmes de soutien fournissant des services tels que l'alimentation électrique, pneumatique ou hydraulique, le refroidissement, la lubrification et l'échantillonnage
  - les spécifications en matière de contrôle chimique

- les aspects opérationnels, comme :
  - le fonctionnement des systèmes et leur rendement prévu
  - l'interdépendance avec le fonctionnement d'autres systèmes
  - les exigences relatives aux spécifications techniques concernant l'opérabilité des systèmes
  - la mise à l'essai des systèmes pour vérifier leur disponibilité, leur fiabilité et leur capacité, y compris le contrôle de l'état des systèmes en ligne, la présentation de rapports et l'établissement de tendances
- les exigences relatives aux essais lors de la mise en service, en vue de :
  - démontrer, dans la mesure du possible, que les OSC respectent leurs exigences en matière de rendement dans tous les états de fonctionnement et les conditions d'accident créditées dans l'analyse de la sûreté (ce qui est particulièrement important pour les caractéristiques de la conception qui sont nouvelles ou utilisées pour la toute première fois)
  - vérifier que les OSC ont été fabriqués et installés correctement

4.5.2 Caractérisation du site

La demande devrait résumer ou citer en référence les renseignements soumis précédemment dans tout document concernant la délivrance de permis ou un examen de l'environnement, comme des énoncés des incidences environnementales et toute demande de permis précédente (notamment un permis de préparation de l'emplacement).

Les résultats de la caractérisation du site sont utilisés pour la conception des installations et l'analyse de la sûreté. La demande devrait confirmer les caractéristiques du site (en particulier pour les événements externes) et évaluer les effets de toute information actualisée.

Pour plus de renseignements sur la caractérisation de l'emplacement et sur les autorités et contrôles en matière de zone d'exclusion, voir REGDOC-1.1.1, *Évaluation et préparation de l'emplacement des nouvelles installations dotées de réacteurs* [18] et REGDOC-2.5.2, *Conception d'installations dotées de réacteurs : Centrales nucléaires* [17].

4.5.3 Principes et exigences en matière de conception

Dans la mesure du possible et en fonction de la quantité de renseignements disponibles sur la conception, la demande devrait décrire les principes et les exigences en matière de conception qui traitent des processus pour la conception globale de l'installation, ainsi que le fonctionnement et les interactions de l'ensemble des SSC à prendre en compte. Pour garantir la fiabilité, la robustesse et la facilité d’entretien de l’installation dotée de réacteurs, le demandeur devrait veiller à ce que la conception :

- respecte des niveaux de qualité élevés
- tient compte de l’OPEX et des derniers avancements en matière de recherche et de développement
- pourra résister aux événements de cause commune et, dans la mesure du possible, aux accidents graves

Quand des aspects de la conception sont fondés sur des principes déterministes conservateurs, comme ceux énoncés dans les normes et les codes internationaux ou dans des documents d’application de la réglementation, la demande devrait décrire le recours à de tels principes. Si la conception de l’installation dotée de réacteurs n’est pas pleinement conforme à un principe déterministe particulier énoncé dans un document d’application de la réglementation, le demandeur devrait démontrer que le niveau général de sûreté n’est pas compromis.

La demande devrait indiquer les critères utilisés pour déterminer le niveau de risque acceptable et montrer qu’ils répondent aux objectifs et aux concepts de sûreté généraux conformément à la section 4 du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17].

La demande devrait décrire la méthode de prise de décision (p. ex. analyse coût-avantage, meilleure technologie disponible, etc.) utilisée pour choisir l’option de conception.

La demande doit décrire le programme de gestion intégrée du vieillissement qui satisfait aux exigences des documents suivants :

- REGDOC-2.6.3, Gestion du vieillissement [21]
- Section sur le vieillissement et l’usure du REGDOC-2.5.2, Conception d’installations dotées de réacteurs : Centrales nucléaires [17]

Objectifs et buts en matière de sûreté

Les objectifs et les buts en matière de sûreté sont décrits en détail dans le REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17].

S’il y a lieu, la demande devrait décrire comment les objectifs et les buts en matière de sûreté ont été atteints dans la conception des SSC et devrait démontrer que ces objectifs et buts respectent les sections sur l’objectif général en matière de sûreté nucléaire et les limites et conditions d’exploitation du REGDOC-2.5.2 [17], incluant les actions que le demandeur a entreprises pour le confirmer et les preuves à l’appui.

Lorsqu'il y a une certaine répétition des informations demandées dans diverses sections, la demande peut inclure des références croisées à des informations détaillées dans d'autres sections, le cas échéant.

Autorité en matière de conception

La demande devrait démontrer que l’autorité en matière de conception, c.-à-d. l’entité qui a la responsabilité générale du processus de conception, est établie conformément à la section sur l’autorité en matière de conception du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17].

La demande devrait nommer l'autorité en matière de conception chargée de la conception globale. Si cette autorité a été transférée d'une autre organisation, le demandeur devrait présenter les relations officielles (y compris les rôles et les responsabilités) et les conditions préalables qui ont dû être remplies avant le transfert.

Règles, codes et normes applicables

La demande devrait démontrer, dans la mesure du possible, que l'enveloppe de conception de l'installation dotée de réacteurs est établie en conformité avec la section sur l'enveloppe de conception de la centrale du REGDOC-2.5.2, *Conception d'installations dotées de réacteurs : Centrales nucléaires* [17].

La demande devrait comprendre des déclarations comme quoi la conception est conforme aux normes et aux codes utilisés. Le demandeur devrait évaluer ces documents en fonction de leur applicabilité, de leur exhaustivité et de leur pertinence, et présenter les résultats de cette évaluation dans la demande. S'il y a lieu, les normes utilisées devraient être accompagnées des exigences additionnelles, qui devraient également être indiquées dans la demande.

Lorsque les codes et les normes diffèrent de ceux utilisés au Canada, le demandeur devrait fournir une évaluation, telle qu'une analyse des écarts. La demande devrait comporter des renseignements sur les cas où les exigences énoncées dans les règlements ou les codes et les normes applicables n'ont pas été satisfaites.

La demande devrait comporter une évaluation de l'importance sur le plan de la sûreté de toute dérogation aux codes et aux normes applicables. S'il y a lieu, une justification séparée et complète devrait être fournie pour chaque dérogation. Cette justification devrait comprendre tous les renseignements nécessaires afin que la CCSN soit certaine que les dérogations éventuelles n'auront pas d'incidence négative sur le niveau général de sûreté de l'installation. Cette justification devrait, le cas échéant, figurer dans la demande de permis d'exploitation ou dans les documents cités en référence dans la demande de permis d'exploitation.

Évaluation de l'ingénierie et de la sûreté

Le demandeur devrait démontrer qu'un processus systématique, utilisant des méthodes d'ingénierie éprouvées, a été appliqué tout au long des activités de conception pour garantir que celle-ci répond à toutes les exigences de sûreté pertinentes, conformément à la section traitant des évaluations de la sûreté du REGDOC-2.5.2, *Conception d'installations dotées de réacteurs : Centrales nucléaires* [17]. Pour les systèmes importants pour la sûreté, cela comprend :

- l'analyse des modes de défaillance et des effets
- l'évaluation de la vulnérabilité aux défaillances uniques, aux liaisons croisées et aux défaillances de cause commune et de mode commun
- l'évaluation de la fiabilité des systèmes et du bon fonctionnement des équipements dans l'environnement prévu
- l'évaluation des événements sismiques, le cas échéant

Le demandeur devrait vérifier que la conception de l'installation dotée de réacteurs satisfait à toutes les autres exigences en matière de sûreté et de réglementation qui s'appliquent.

La demande devrait résumer dans quelle mesure les exigences de conception applicables sont respectées (en faisant référence aux rapports originaux), y compris les renseignements techniques portant sur les points suivants :

- la résistance des matériaux
- la protection contre la surpression
- la résistance à la corrosion
- la qualification environnementale
- l’évaluation de la fiabilité
- la résistance aux interférences électromagnétiques et aux radiofréquences
- la vérification et la validation des logiciels

Cette section devrait également fournir les renseignements suivants pour chacun des systèmes validés, ou qui soutiennent un système validé, dans l’analyse de sûreté :

- une évaluation de la capacité fonctionnelle du système qui est directement validée dans l’analyse de sûreté, y compris, mais sans s’y limiter :
  - la synchronisation du fonctionnement du système
  - l’enveloppe de rendement minimale du système pour atteindre les hypothèses avancées dans l’analyse de la sûreté
  - la capacité du système à exécuter ses fonctions tout au long de la durée de vie de l’installation dotée de réacteurs
  - la capacité du système à exécuter ses fonctions dans n’importe quelle condition environnementale anormale lors de scénarios d’accidents pour lesquels le système est validé
  - une démonstration que la séparation physique, les dispositifs d’isolation de l’alimentation électrique et des fluides ainsi que les exigences relatives à la qualification environnementale (ou toute autre mesure de protection spéciale) offrent une capacité suffisante pour l’exécution fiable des fonctions validées

Identification des états et configurations d’exploitation de la centrale

La demande devrait comprendre tous les états et toutes les configurations d’exploitation de l’installation dotée de réacteurs conformément aux documents suivants :

- REGDOC-2.4.1, *Analyse déterministe de la sûreté* [16]
- Section sur le vieillissement et l’usure du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]

En ce qui a trait aux états de fonctionnement (exploitation normale et incidents de fonctionnement prévus [IFP]), les renseignements devraient comprendre des configurations telles que le démarrage, l’exploitation à puissance normale, l’arrêt du réacteur, l’état d’arrêt, le rechargement de combustible et toute autre configuration d’exploitation normale autorisée. La demande devrait contenir les principaux paramètres et les caractéristiques uniques de chaque configuration opérationnelle, ainsi que toute disposition de conception particulière visant à maintenir la configuration. La demande devrait également fournir les périodes admissibles d’exploitation dans diverses conditions (p. ex. le niveau de puissance) dans l’éventualité d’un écart par rapport aux conditions d’exploitation normale.

Enveloppe de conception

La demande devrait comporter un renvoi à l’enveloppe de conception de l’installation dotée de réacteurs, laquelle comprend tous les états et configurations de l’installation dotée de réacteurs. Le demandeur devrait démontrer que l’autorité responsable de la conception a établi l’enveloppe de conception de l’installation dotée de réacteurs.

Défense en profondeur

Le demandeur devrait décrire l’approche adoptée pour intégrer le concept de défense en profondeur dans la conception de l’installation dotée de réacteurs. La méthode de conception adoptée devrait comprendre des niveaux et des barrières multiples de défense qui sont aussi indépendants dans la mesure du possible, de façon à offrir une protection contre les IFP et les accidents, y compris les AD et les accidents graves. Pour de plus amples renseignements, consulter les sections sur la défense en profondeur et l’application du concept de défense en profondeur du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17].

La demande devrait décrire le choix des principales barrières, plus particulièrement les OSC importants pour la sûreté. Elle devrait décrire toute intervention proposée de l’opérateur visant à atténuer les conséquences des événements et à faciliter l’exécution des fonctions de sûreté importantes pour l’installation dotée de réacteurs.

Fonctions de sûreté

La demande devrait décrire comment les fonctions de sûreté fondamentales ont été intégrées dans la conception de l’installation dotée de réacteurs, conformément à la section sur les fonctions de sûreté du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]. La demande devrait fournir des renseignements sur les OSC servant à accomplir les fonctions de sûreté nécessaires à divers intervalles suivant un événement initiateur hypothétique (EIH).

La demande devrait également fournir une description de toutes les fonctions de sûreté additionnelles de l’installation dotée de réacteurs, comme l’évacuation de la chaleur dégagée par le combustible irradié dans les systèmes de manutention et d’entreposage du combustible.

Classification de sûreté des structures, systèmes et composants

La demande devrait décrire l’approche adoptée dans la conception pour la classification de sûreté des SSC. L’approche devrait être conforme à la section traitant de la classification de sûreté des SSC du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]. Elle devrait également indiquer les critères visant à déterminer les exigences de conception appropriées pour chaque catégorie, telles que :

- les normes et les codes appropriés devant être utilisés pour la conception, la fabrication, la construction, l’essai et l’inspection de chaque OSC
- conformément aux sections appropriées du REGDOC-2.5.2 [17] :
  - les caractéristiques relatives aux systèmes, comme le degré de redondance, la diversité, la séparation, et la fiabilité (section sur la fiabilité)
  - la qualification environnementale (section sur la qualification environnementale de l’équipement)
  - la qualification sismique (section sur la qualification sismique et la conception)

- les exigences relatives à la disponibilité pour le service sur demande de OSC particuliers, de même que les exigences de fiabilité quant au temps de mission prescrit
- les exigences en matière d’assurance de la qualité

Fiabilité

La demande devrait démontrer, dans la mesure du possible, le fondement des objectifs de fiabilité qui satisfont aux exigences de la section sur la fiabilité du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17] et du REGDOC-2.6.1, *Programmes de fiabilité pour les centrales nucléaires* [21].

Le demandeur devrait démontrer que tous les OSC importants pour la sûreté ont été conçus pour être suffisamment fiables et de bonne qualité afin de répondre aux limites de conception. Le demandeur devrait fournir une analyse de fiabilité pour chacun de ces OSC. Conformément aux sections appropriées du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17], la demande devrait prendre en compte les éléments suivants :

- défaillances de cause commune
- critère de défaillance unique
- conception à sûreté intégrée
- indisponibilité de l’équipement
- systèmes partagés

Facteurs humains

La demande devrait décrire de quelle façon la conception de l’installation dotée de réacteurs tient compte des facteurs humains. Elle devrait décrire le processus systématique qui a été suivi pour tous les systèmes afin d’intégrer les considérations sur les facteurs humains dans la description, la définition et l’analyse des exigences, dans les activités liées à la conception et dans les activités de vérification et de validation.

La demande devrait décrire les interfaces entre les facteurs humains dans la conception et d’autres domaines (qui serviront notamment à élaborer des procédures d’exploitation et d’autres procédures et formation). La demande devrait également décrire les considérations relatives aux facteurs humains qui s’appliquent à la conception de OSC particuliers, y compris :

- les interfaces homme-machine pour tous les états de l’installation dotée de réacteurs
- l’instrumentation, les postes d’affichage et les alarmes servant à surveiller le fonctionnement des systèmes
- l’emplacement physique, l’accessibilité et la convivialité de l’équipement qui est exploité, testé, entretenu et surveillé
- les systèmes de verrouillage physique et les indications du statut de contournement ou de non-opérabilité.

La demande devrait comprendre une liste des analyses et des activités relatives aux facteurs humains qui ont servi à l’élaboration de la conception. Le demandeur devrait démontrer que l’ingénierie des facteurs humains et les considérations relatives aux interfaces homme-machine ont été appliquées à tous les modes de fonctionnement de l’installation dotée de réacteurs et aux conditions d’accident, ainsi qu’à tous les endroits de l’installation dotée de réacteurs où de telles interactions sont prévues.

Le demandeur devrait également fournir un plan de programme d’ingénierie des facteurs humains.

Pour obtenir des renseignements additionnels sur les exigences liées à la conception des facteurs humains, consulter les documents suivants :

- REGDOC-2.5.1, *Considérations générales liées à la conception : facteurs humains* [22]
- CSA N290.12-F14, *Facteurs humains dans la conception des centrales nucléaires* [23]
- Section sur les facteurs humains du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]

Radioprotection

La demande doit comporter une description de la méthode de conception adoptée qui démontre que la conception de l’installation répond aux exigences du *Règlement sur la radioprotection* ainsi qu’aux objectifs de radioprotection et critères d’acceptation des doses, conformément aux sections sur l’objectif en matière de radioprotection et les critères d’acceptation des doses du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17].

Les renseignements présentés doivent démontrer que, pendant la durée du cycle de vie de l’installation nucléaire et dans tous les états de fonctionnement, les doses de rayonnement à l’intérieur de l’installation dotée de réacteurs ou résultant de tout rejet planifié de matière radioactive sont maintenues en deçà des limites réglementaires et au niveau le plus bas qu’il soit raisonnablement possible d’atteindre (principe ALARA).

Robustesse contre des actes malveillants

Les renseignements présentés devraient démontrer que la conception tient compte de la protection physique et des voies de transport, conformément aux exigences des documents suivants :

- *Règlement sur la sécurité nucléaire*
- REGDOC-1.1.1, *Évaluation et préparation de l’emplacement des nouvelles installations dotées de réacteurs* [18]
- Section sur la robustesse contre des actes malveillants du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]

La demande devrait décrire la méthode générale de conception, de même que l’approche et les dispositions suivies pour assurer la protection physique de l’installation dotée de réacteurs (y compris les zones de contrôle) contre le sabotage interne et externe. Il faudrait en outre prendre en considération le choix de matériaux particuliers, la séparation physique des systèmes redondants, les exigences en matière de rendement de l’équipement et l’utilisation de barrières pour séparer les trains de sûreté redondants.

La description de la méthode de conception devrait comprendre :

- les règles suivies pour établir la portée des menaces
- la justification concernant la détermination des zones vitales et des charges prévues (p. ex. la force d’impact, les ondes de pression de souffle, les vibrations provoquées de l’intérieur, les incendies, les projectiles) sur les OSC et les bâtiments
- la méthode utilisée pour évaluer la vulnérabilité de l’installation dotée de réacteurs ainsi que les mesures choisies pour contrer ces vulnérabilités et leurs conséquences

La demande devrait également décrire les mesures destinées à protéger la capacité :

- de surveillance et de contrôle des paramètres de l’installation dotée de réacteurs
- de gestion des urgences et de l’intervention en cas d’urgence
- des mesures d’atténuation et de rétablissement visant à assurer la sécurité des travailleurs et de la population

Remarque : Les documents du demandeur et la correspondance connexe liée à ce domaine sont considérés comme des renseignements réglementés en vertu de la LSRN et doivent être protégés lorsqu’ils sont soumis à la CCSN. De l’orientation concernant la protection et la transmission de renseignements réglementés se trouve dans le REGDOC-2.12.3, *La sécurité des substances nucléaires : sources scellées et matières nucléaires de catégories I, II et III* [4]. La *Politique sur la sécurité du gouvernement* [5] du Secrétariat du Conseil du Trésor du Canada et les directives connexes (dont les liens figurent sur la page Web de la Politique) fournissent une orientation, des renseignements contextuels et des pratiques recommandées sur le traitement, la présentation et la transmission des biens considérés comme étant de nature délicate (comme des renseignements réglementés).

Garanties dans la conception et le processus de conception

En ce qui concerne la conception et le processus de conception, l’information présentée devrait démontrer que la conception et le processus de conception sont conformes aux obligations découlant de l’accord de garanties entre le Canada et l’Agence internationale de l’énergie atomique (AIEA). Pour de plus amples renseignements sur les garanties, voir la section 4.13.

Modifications apportées à la conception

La demande devrait décrire les dispositions établies pour assurer le contrôle et la mise en œuvre des modifications apportées à la conception afin que l’installation dotée de réacteurs soit entretenue et modifiée en respectant les limites prescrites par la conception, l’analyse et le fondement d’autorisation (dès qu’il aura été établi).

La demande devrait également décrire les processus employés pour maintenir le dimensionnement, en tenant compte des nouveaux renseignements, de l’expérience en exploitation, des analyses de la sûreté, des solutions apportées aux questions de sûreté ou de la correction des lacunes.

La demande devrait décrire comment les modifications apportées à la conception sont évaluées, prises en compte et reflétées de façon précise dans les analyses de la sûreté ou l’analyse du dossier avant la mise en œuvre.

Intégration de l’expérience en exploitation et des recherches en matière de sûreté dans la conception et le processus de conception

La demande devrait décrire comment les leçons tirées de l’exploitation d’autres installations ou les résultats de nouvelles recherches ont été intégrées dans la conception proposée de l’installation dotée de réacteurs, conformément à la section sur l’expérience d’exploitation et la recherche en matière de sûreté du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17].

En ce qui concerne la conception et le processus de conception, la demande devrait décrire comment la rétroaction sur l’expérience en exploitation et les recherches en matière de sûreté tiennent compte :

- des modifications apportées à la conception en raison des récents progrès réalisés au niveau des caractéristiques des matériaux
- de l’amélioration des procédés de construction et de fabrication
- des considérations liées aux améliorations à la fiabilité, à l’exploitabilité et à la facilité d’entretien de l’installation dotée de réacteurs
- des considérations sur l’approche en matière de sûreté actuelle
- de la compréhension des phénomènes importants qui régissent le comportement des installations dotées de réacteurs
- des méthodes et des outils utilisés pour la conception et l’analyse

Exploitabilité et facilité d’entretien

La demande devrait décrire de quelle manière, de façon générale, le processus de conception et ses extrants soutiennent la conception en ce qui concerne l’exploitabilité et la facilité d’entretien des systèmes et de l’équipement, conformément aux sections traitant de l’exploitation normale et des essais en service, de l’entretien, de la réparation, de l’inspection et de la surveillance dans le REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17].

Contrôle des corps étrangers

La demande devrait démontrer que la conception prévoit la détection, l’exclusion et l’élimination de tous les corps étrangers et produits corrosifs qui pourraient avoir une incidence sur la sûreté.

Autres fonctions de sûreté

La demande devrait préciser, décrire et expliquer la pertinence de tout autre critère ou exigence en matière de sûreté qui a été respecté dans la conception pour réduire les effets des défaillances et rendre la conception plus sûre. Les renseignements devraient comprendre les éléments suivants, sans toutefois s’y limiter :

- des marges de sûreté adéquates
- une conception simplifiée
- des dispositifs de sûreté passifs
- des systèmes d’intervention graduelle
- des systèmes et une installation dotée de réacteurs tolérant les défaillances
- des systèmes conviviaux pour l’exploitant
- les concepts de fuite avant rupture
- une conception à sûreté intégrée

Déclassement

La demande doit décrire des considérations et les dispositions de conception qui faciliteront les futures activités de déclassement et de démantèlement de l’installation dotée de réacteurs.

La demande devrait également décrire les considérations et les dispositions relatives à l’entreposage des déchets radioactifs une fois l’exploitation commerciale terminée.

4.5.4 Conception de l’installation

La demande doit décrire les processus relatifs à la pertinence globale de la conception de l’installation, y compris la configuration de l’installation elle-même.

Caractéristiques techniques de base

La demande devrait comprendre une description (dans un tableau si cela convient) des principales caractéristiques et spécifications de l’installation dotée de réacteurs, y compris (sans toutefois s’y limiter) :

- le nombre de tranches
- le type d’installation dotée de réacteurs, ses principales caractéristiques et spécifications
- les systèmes de sûreté
- le type de système nucléaire d’alimentation en vapeur utilisé
- le type de structure de confinement
- les niveaux d’énergie thermiques qui doivent être atteints dans le cœur
- le débit de la puissance électrique nette correspondant à chaque niveau d’énergie thermique
- toute autre caractéristique nécessaire à la compréhension des principaux processus inclus dans la conception

Dans le cas où la conception de l’installation dotée de réacteurs serait semblable à des conceptions déjà approuvées par la CCSN, le demandeur devrait fournir une comparaison qui indique et justifie toutes les principales modifications ou améliorations intégrées dans la conception proposée.

Plan d’aménagement des principaux systèmes et équipements de l’installation

La demande devrait comprendre les dessins techniques et schémas de base des principaux OSC de l’installation dotée de réacteurs, notamment :

- les détails de l’emplacement physique et géographique de l’installation dotée de réacteurs
- les raccordements au réseau électrique
- les moyens d’accès au site par chemin de fer, routes et voies maritimes

Les renseignements devraient être suffisants pour permettre à la CCSN de vérifier que :

- la conception de l’installation est conforme aux sections sur la zone d’exclusion et le plan de l’installation du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]
- la conception de l’installation dotée de réacteurs nucléaire est assortie de dispositions appropriées pour l’établissement d’une zone d’exclusion adéquate

Les renseignements présentés devraient démontrer que :

- l’aménagement de l’installation tient compte des EIH pour renforcer la protection des OSC importants pour la sûreté
- conformément à la section traitant de la radioprotection du REGDOC-2.5.2 [9], des dispositions adéquates ont été prises dans la conception et l’aménagement de l’installation dotée de réacteurs afin de réduire les doses et les rejets de substances radioactives provenant de toutes les sources

La demande devrait également comprendre les dessins du plan d’aménagement de l’ensemble de l’installation dotée de réacteurs, accompagnés d’une brève description des principaux systèmes et équipements de l’installation dotée de réacteurs ainsi que de leurs fonctions et de leurs interactions distinctes. Les renseignements relatifs au plan d’aménagement de l’installation qui sont liés à la sécurité devraient être protégés lorsqu’ils sont soumis.

La demande devrait comprendre des renvois aux autres sections qui présentent des descriptions plus détaillées des OSC. La demande devrait décrire les principales interfaces et limites entre les systèmes et l’équipement sur le site fournis par différentes organisations chargées de la conception, y compris les interfaces avec les systèmes et l’équipement externes à l’installation dotée de réacteurs (p. ex. le réseau électrique). La description devrait montrer en détail comment seront coordonnées les activités d’exploitation de l’installation dotée de réacteurs.

La demande devrait comprendre un renvoi aux renseignements confidentiels sur les mesures prises pour la protection physique de l’installation dotée de réacteurs.

4.5.5 Conception des structures

La demande doit présenter des renseignements justificatifs sur la conception du plan d’aménagement du site, ainsi que sur les ouvrages et les structures de génie civil liés à l’installation nucléaire, de manière suffisamment détaillée pour permettre au personnel de la CCSN de vérifier que la conception est conforme aux sections sur les structures de génie civil et la résistance de la structure de confinement du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]. Dans la mesure du possible et en fonction de la quantité de renseignements sur la conception, la demande devrait décrire ce qui suit :

- les procédures de conception et d’analyse, les conditions limites supposées et les programmes informatiques utilisés dans les analyses, les renseignements fournis sur l’aménagement du site et de l’installation dotée de réacteurs devraient comprendre les structures et les bâtiments principaux (y compris les fondations), les sources d’eau de refroidissement, les raccordements au réseau et l’accès à tous les services essentiels requis pour l’exploitation en mode normal de même qu’en cas d’urgence
- les principes de conception, les exigences et les critères relatifs au dimensionnement, de même que les codes et les normes applicables utilisés dans la conception :
    - la demande devrait démontrer que les marges de sûreté sont suffisantes pour les structures et les bâtiments importants pour la sûreté (p. ex. en ce qui a trait à la conception sismique et à la robustesse contre les événements internes et externes)
    - la demande devrait clairement signaler et justifier tout écart par rapport aux codes et aux normes applicables ou à toute autre exigence relative à la conception
- la classification de sûreté pour chaque bâtiment contenant de l’équipement ou utilisée pour des activités importantes sur le plan de la sûreté; la classification devrait correspondre à la classification des systèmes et de l’équipement qu’ils contiennent ou des opérations pour lesquelles ils sont utilisés
- la classification sismique pour chaque structure et chaque bâtiment :
    - les descriptions fournies devraient indiquer la mesure dans laquelle les diverses combinaisons de charges ont été prises en compte pour confirmer la capacité du bâtiment ou de la structure à remplir ses fonctions de sûreté
    - si une structure exerce une fonction autre qu’un soutien structurel (p. ex. le blindage contre le rayonnement, les barrières de séparation ou le confinement), la demande devrait préciser les exigences additionnelles liées à cette fonction et les citer en référence dans les autres sections pertinentes de la demande

- la gamme des exigences en matière de rendement et des charges structurelles prévues, y compris tout élément de conception lié à des dangers particuliers au cours de l’exploitation, ainsi que tout élément de conception et mesure d’atténuation en place pour gérer les accidents hors dimensionnement

La description des structures qui abritent des matières nucléaires (comme du combustible neuf, du combustible usé, de l’eau ordinaire tritiée ou de l’eau lourde tritiée) devrait comprendre les éléments de conception (p. ex. les charges appliquées, les codes et les normes, les outils analytiques et les propriétés des matériaux), la stabilité structurale, les déplacements relatifs et la protection contre les événements internes et externes qui ont été pris en compte.

La demande devrait contenir des renseignements suffisants sur la conception pour appuyer la construction adéquate et sécuritaire de tous les bâtiments, de l’infrastructure civile et des ouvrages de génie civil. Pour la construction des ouvrages de génie civil, les « renseignements suffisants » comprendraient généralement les dessins, les calculs et les spécifications nécessaires pour l’obtention d’un permis de construction auprès des responsables provinciaux. Cependant, pour une installation dotée de réacteurs, ces renseignements sur la conception sont fondés sur les exigences des codes et des normes nucléaires (p. ex. les séries de normes CSA N291, N289 et N287).

La demande devrait comprendre les exigences relatives à la sûreté du bâtiment ou du système de confinement, entre autres son intégrité structurale, son étanchéité et sa résistance aux charges stables et transitoires (comme celles découlant des effets de la pression, de la température, du rayonnement et des effets mécaniques qui pourraient être causés par des événements internes et externes). La demande devrait également comprendre les principales caractéristiques de la conception des structures choisies pour satisfaire à ces exigences de sûreté.

La demande devrait fournir des détails sur les exigences de sûreté et les caractéristiques de la conception de toutes les structures qui soutiennent des fonctions de confinement, comme les structures de la voûte du réacteur, les portes de blindage, les sas, le contrôle de l’accès et les installations, conformément à la section traitant du confinement du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]. La demande devrait aussi décrire le couplage entre les structures internes et la principale structure de confinement qui influe sur la transmission des charges des événements externes aux structures internes.

La description des dispositions de conception devrait notamment comprendre les précisions suivantes :

- la liste des guides et des exigences de conception applicables
- les descriptions des structures, y compris :
  - la dalle-support et la couche de fondation
  - la conception des murs de confinement
  - les ouvertures et les percées dans les murs de confinement
  - le système de précontrainte
  - le revêtement du confinement et sa méthode de fixation

La demande devrait décrire l’enceinte de confinement, y compris les modèles et les méthodes analytiques utilisés, de même que les résultats de l’évaluation de la capacité de pression maximale du confinement en fonction des critères d’acceptation correspondants. Pour les conceptions incluant une plaque de revêtement, la demande devrait présenter les procédures d’analyse et de conception de la plaque de revêtement et de son ancrage.

4.5.6 Conception des systèmes

Le demandeur devrait présenter des renseignements pertinents sur la description des systèmes, les OSC sous pression, la qualification environnementale de l'équipement, l'interférence électromagnétique, la qualification sismique ainsi que la sécurité-incendie et la protection contre les incendies.

Description des systèmes

Le demandeur devrait décrire en détail les caractéristiques et les principaux composants des systèmes et ses exigences en matière de dimensionnement (p. ex. les exigences fonctionnelles et les exigences de rendement liées à la définition du dimensionnement).

Structures, systèmes et composants sous pression ou contenant des fluides

La demande devrait décrire le fondement pour la conception des SSC sous pression ou contenant des fluides et de leurs supports, conformément à la section traitant des structures, systèmes, et composants du REGDOC-2.5.2, *Conception d'installations dotées de réacteurs : Centrales nucléaires* [17]. La demande devrait aussi décrire les normes et les codes concernant l'enveloppe sous pression (ainsi que leur numéro de version ou d'édition, et leur date d'entrée en vigueur). Elle devrait également décrire le programme global relatif à l'enveloppe sous pression, y compris ses processus et procédures de mise en œuvre. En outre, le demandeur devrait décrire l'entente de service avec une agence d'inspection autorisée reconnue et le programme connexe d'assurance de la qualité visant l'enveloppe sous pression.

Qualification de l'équipement

Le demandeur devrait fournir des processus détaillés et des spécifications pour un programme de qualification de l'équipement, et ce programme devrait indiquer les conditions de service de l'équipement. La demande devrait démontrer que l'équipement peut remplir ses fonctions de sûreté prévues selon les conditions environnementales définies pour tous les états de l'installation dotée de réacteurs pour lesquels il est validé.

La demande devrait inclure les exigences fonctionnelles désignées, la définition des paramètres environnementaux applicables et la documentation du processus de qualification utilisé pour démontrer que l'équipement requis est en mesure de répondre aux exigences conformément aux sections abordant la documentation sur la conception, les états de la centrale, les règles et limites de conception, la qualification environnementale de l'équipement ainsi que les essais, l'entretien, les réparations, l'inspection et la surveillance en cours d'exploitation du REGDOC-2.5.2, *Conception d'installations dotées de réacteurs : Centrales nucléaires* [17].

Dans le cas des OSC importants pour la sûreté, la demande devrait décrire comment les effets du vieillissement, dus à la durée de vie en service, sont pris en compte.

Interférence électromagnétique

Le demandeur devrait démontrer que l'instrumentation et l'équipement électrique des OSC importants pour la sûreté sont protégés contre les défaillances causées par l'interférence électromagnétique (IEM) pour tous les états de fonctionnement de l'installation dotée de réacteurs pour lesquels ils sont validés.

Les renseignements présentés devraient respecter les exigences conformément à la section sur l’instrumentation et le contrôle du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17] et également démontrer, comme il est précisé dans la conception, que l’instrumentation et l’équipement électrique peuvent fonctionner dans l’environnement électromagnétique appliqué de l’installation dotée de réacteurs dans différents états de fonctionnement et sans produire de perturbations électromagnétiques importantes touchant d’autre équipement dans l’installation dotée de réacteurs.

La demande devrait comprendre les stratégies d’aménagement de l’installation pour la mise en terre et le blindage, et devrait aussi préciser les exigences relatives à la manutention et au stockage des dispositifs qualifiés pour mesurer l’IEM.

Qualification sismique

La demande devrait décrire comment la conception de l’installation dotée de réacteurs protège les OSC (y compris les structures des bâtiments) contre les dommages causés par des séismes, et comment cette approche est conforme à la section sur la qualification sismique et la conception du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]. Le demandeur devrait veiller à ce qu’une instrumentation soit en place pour surveiller l’activité sismique sur le site pendant tout le cycle de vie de l’installation.

Les OSC importants pour la sûreté devraient être conçus pour résister à un séisme de dimensionnement. Pour ce qui est des séismes hors dimensionnement, le demandeur devrait démontrer, avec un niveau de confiance élevé, que la probabilité de défaillance des OSC validés pour fonctionner pendant et après l’événement est très faible.

4.5.7 Sécurité-incendie et système de protection-incendie

La demande devrait décrire de quelle manière les dispositions de conception de l’installation dotée de réacteurs vont tenir compte de la prévention, la protection, le contrôle, l’atténuation, l’intervention et le rétablissement en cas d’incendie (y compris les explosions) dans le but de protéger les OSC, les personnes et l’environnement.

La demande devrait comprendre un examen de la conception réalisé par une tierce partie indépendante. Celle-ci évaluera la conformité par rapport aux codes et aux normes applicables relatifs aux incendies, lesquels sont utilisés dans la conception pour la protection contre les incendies et les explosions.

4.5.8 Réacteur et système de refroidissement du réacteur

La demande devrait démontrer que le réacteur et son système de refroidissement du cœur respectent les exigences des sections sur le cœur du réacteur, le système de refroidissement du réacteur et les systèmes d’arrêt d’urgence du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17].

Le demandeur devrait fournir des renseignements pertinents concernant le réacteur, y compris une description sommaire :

- du comportement mécanique, nucléaire, thermique et hydraulique des conceptions des divers composants du réacteur
- du combustible, des parties internes de réacteur et des systèmes de contrôle de la réactivité
- de l’instrumentation connexe et des systèmes de contrôle en place, afin de démontrer la capacité du réacteur à exécuter ses fonctions de sûreté dans tous les états de fonctionnement de l’installation dotée de réacteurs et tout au long de sa durée de vie

Le demandeur devrait vérifier que le programme de sûreté-criticité nucléaire répond aux exigences énoncées dans le REGDOC-2.4.3, *Sûreté-criticité nucléaire* [24] et à la section sur la manutention et l’entreposage du combustible du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17].

Conception du système de combustible

Le demandeur devrait fournir les renseignements suivants concernant les aspects thermiques, mécaniques, thermohydrauliques et physiques de la conception de tous les systèmes et composants du combustible, y compris une description de la fabrication du combustible et un résumé de la gestion du combustible dans le cœur :

- les documents de conception de tous les systèmes de combustible qui doivent être utilisés, y compris les schémas de conception du combustible
- les exigences relatives au dimensionnement du combustible
- les évaluations de la conception du combustible
- une description des méthodes et des codes informatiques utilisés pour évaluer le comportement du combustible dans des conditions d’exploitation normale ou d’accidents
- des plans de mise à l’essai, d’inspection et de surveillance
- le processus de fabrication

Conception des parties internes du réacteur

La demande devrait décrire la conception des parties internes du réacteur et les exigences liées à leur dimensionnement, plus particulièrement :

- les structures dans lesquelles le combustible a été assemblé (p. ex. l’assemblage du combustible ou les grappes de combustible)
- les composants connexes requis pour le positionnement du combustible
- tous les éléments de soutien internes du réacteur, y compris toute disposition distincte pour la modération et l’emplacement du combustible

Les renseignements fournis devraient être liés aux autres sections qui portent sur le combustible du réacteur et à sa manutention et son entreposage, et servir de complément, notamment (en fonction de la technologie proposée) :

- les propriétés physiques et chimiques des composants du combustible, y compris :
  - les aspects thermohydrauliques, structuraux et mécaniques
  - la réponse prévue aux charges mécaniques statiques et dynamiques, de même que leur comportement
  - une description des effets de l’irradiation sur la capacité des parties internes du réacteur à exécuter adéquatement leurs fonctions de sûreté tout au long de la durée de vie de l’installation dotée de réacteurs

- tout composant important du sous-système, y compris toute disposition distincte pour la modération et l’emplacement du combustible (fournir les schémas de conception correspondants)
- la prise en considération des effets du service sur le rendement des fonctions de sûreté, dont les programmes de surveillance et d’inspection des parties internes du réacteur, dans le but de surveiller les effets de l’irradiation et du vieillissement des parties internes
- le programme de surveillance du comportement et du rendement du cœur, qui devrait comprendre des dispositions visant à surveiller les éléments neutroniques, les dimensions et les températures du cœur

Conception nucléaire et rendement du cœur du réacteur nucléaire

La demande devrait décrire la façon dont la conception répond aux exigences liées au dimensionnement pour :

- la conception nucléaire du combustible
- les systèmes de contrôle de la réactivité (y compris les limites de contrôle nucléaire et de la réactivité comme l’excédent de réactivité, la combustion du combustible et les contre-réactions de réactivité)
- la durée de vie du cœur du réacteur
- les stratégies de remplacement du combustible
- les coefficients de réactivité
- les critères de stabilité
- les taux maximums d’insertion et de retrait de réactivité contrôlée
- le contrôle des distributions de puissance
- les marges d’arrêt
- les critères pour la vitesse des barres et les barres coincées
- le contrôle des éléments de compensation chimiques et mécaniques
- les exigences en matière de poison neutronique
- toutes les mesures d’arrêt

La description devrait également comprendre, le cas échéant, les éléments suivants de la conception, s’ils s’appliquent :

- les distributions de l’enrichissement du combustible
- les distributions du poison consommable
- les caractéristiques physiques du réseau ou de l’assemblage propre aux paramètres de la conception nucléaire
- les fractions de neutrons retardés et les durées de vie des neutrons
- la durée de vie et la combustion du cœur du réacteur
- l’accumulation de plutonium
- les taux d’insertion de poison soluble
- l’épuisement du xénon et d’autres exigences relatives aux phénomènes transitoires

Des renseignements additionnels détaillés sur les éléments suivants devraient être fournis, s’il y a lieu :

- les distributions de puissance
- les coefficients de réactivité
- les exigences en matière de contrôle de la réactivité

- les dispositifs de réactivité
- la criticité au cours du rechargement du combustible
- la stabilité du cœur du réacteur; les questions d’irradiation
- les méthodes d’analyse utilisées (de même que les renseignements relatifs à la vérification et à la validation, ainsi que les incertitudes)
- les plans de mises à l’essai et d’inspection
- les limites et conditions d’exploitation

Conception thermohydraulique du cœur

La demande devrait comprendre des renseignements concernant le réacteur et la conception thermohydraulique du système de refroidissement du réacteur, y compris ce qui suit :

- les exigences relatives au dimensionnement, la conception thermique et hydraulique du cœur du réacteur et des structures attenantes, ainsi que les exigences relatives à l’interface pour la conception thermique et hydraulique du système de refroidissement du réacteur
- les outils analytiques, les méthodes et les codes informatiques (de même que les codes relatifs à la vérification et les renseignements liés à la validation et aux incertitudes) utilisés pour calculer les paramètres thermiques et hydrauliques
- les distributions d’écoulement, de pression, de vide et de température, leurs valeurs limitatives et une comparaison avec les limites de conception
- la justification de la stabilité thermohydraulique du cœur, p. ex. la stabilité en situation d’écoulement naturel ou forcé par rapport :
  - à la rétroaction neutronique et thermohydraulique
  - aux variations de flux

Systèmes de contrôle de la réactivité

La conception des systèmes de contrôle de la réactivité devrait comporter des moyens de détection des niveaux et des distributions du flux neutronique. Les renseignements présentés sur les systèmes de contrôle de la réactivité devraient comprendre les éléments suivants, sans toutefois s’y limiter :

- les exigences relatives au dimensionnement des systèmes
- des preuves comme quoi les systèmes de contrôle de la réactivité, y compris tout équipement auxiliaire essentiel, sont conçus pour fournir le rendement fonctionnel requis et sont adéquatement isolés d’autre équipement
- la description des tests de qualification et de mise en service qui ont été réalisés afin de s’assurer que le rendement de l’équipement et des systèmes est conforme aux exigences de conception et correspond aux déclarations concernant leur rendement faites dans l’analyse de la sûreté
- une description de la manière dont les exigences de séparation et de diversité ont été respectées
- une description du taux d’insertion de la réactivité et de la profondeur de chaque système de contrôle de la réactivité conformément à la section sur les systèmes d’arrêt d’urgence du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]

Ensemble, les OSC importants pour la sûreté de l’instrumentation et des systèmes de contrôle ainsi que des systèmes de contrôle de la réactivité devraient tous satisfaire aux exigences relatives aux mécanismes d’arrêt d’urgence, conformément à la section sur les systèmes d’arrêt d’urgence du REGDOC-2.5.2 [17].

Matériaux du réacteur

La demande devrait décrire les matériaux utilisés dans la fabrication des composants du réacteur (y compris les matériaux de l’enveloppe sous pression du système de refroidissement du réacteur, les matériaux pour les fonctions de soutien du cœur du réacteur ainsi que les matériaux des composants à l’intérieur du cœur comme les barres de commande et l’instrumentation). La demande devrait fournir des renseignements sur les spécifications des matériaux, y compris :

- leurs propriétés chimiques, physiques et mécaniques
- leur résistance à la corrosion
- leur stabilité dimensionnelle, leur intégrité, leur robustesse, leur dureté et leur tolérance aux fissures
- la microstructure et les détails relatifs à la fabrication des matériaux, quand cet aspect est important

La demande devrait décrire les propriétés et le rendement requis des joints d’étanchéité et les dispositifs de fixation de l’enveloppe sous pression primaire.

La demande devrait décrire un programme de surveillance des matériaux visant à répondre à toute dégradation potentielle des matériaux pour tous les composants, surtout en ce qui concerne les composants qui fonctionnent dans des zones à champs de rayonnement élevé, afin de déterminer les effets métallurgiques ou les autres effets de dégradation associés à des facteurs comme l’irradiation, la fissuration par corrosion sous contrainte, la corrosion accélérée par les écoulements, la fragilisation thermique, la fatigue causée par les vibrations et d’autres mécanismes de vieillissement.

La demande devrait décrire comment les propriétés neutroniques des matériaux des barres de commande sont prises en compte dans la conception nucléaire et le rendement du cœur du réacteur nucléaire.

Conception du système de refroidissement du réacteur et des systèmes auxiliaires du réacteur

Dans la mesure du possible, la demande devrait présenter les exigences relatives au dimensionnement pour le système de refroidissement du réacteur et ses principaux composants. La demande devrait décrire le rendement et les caractéristiques de la conception du système pour que ses divers composants et ses sous-systèmes connexes respectent les exigences en matière de sûreté visant la conception.

La demande devrait démontrer que les OSC du système de refroidissement du réacteur sont conçus, fabriqués et installés de manière à pouvoir réaliser des inspections périodiques et des tests pendant toute leur durée de vie.

S’il y a lieu, les renseignements fournis devraient couvrir :

- les pompes du liquide de refroidissement du réacteur
- les générateurs de vapeur ou les chaudières
- le système de dépressurisation
- la tuyauterie du système de refroidissement du réacteur
- le système d’isolation des tuyaux de vapeur principaux

- le système de refroidissement et d’isolation du cœur du réacteur
- les tuyaux de vapeur principaux et les canalisations principales d’eau d’alimentation
- le pressuriseur
- le système de décharge de vapeur
- les dispositions pour le refroidissement principal et d’urgence
- le système d’évacuation de la chaleur résiduelle et ses composants comme les pompes et les valves
- les supports des tuyauteries, des cuves et des composants

La demande devrait préciser où se trouvent, dans la documentation sur la conception, les renseignements sur les inspections, y compris l’examen volumétrique ou visuel et les mises à l’essai.

La demande devrait décrire tous les autres systèmes associés au réacteur qui ne sont pas présentés ailleurs dans la demande.

Intégrité de l’enveloppe sous pression ou de l’enveloppe fluidique du système de refroidissement du réacteur

La demande devrait comprendre les résultats des évaluations analytiques et numériques détaillées des contraintes ainsi que des études de mécanique technique et de mécanique de la fissure pour tous les composants qui forment l’enveloppe sous pression ou de l’enveloppe fluidique du système de refroidissement du réacteur.

La demande devrait tenir compte de toute la gamme des conditions d’accident d’exploitation et hypothétiques pour tous les modes de fonctionnement, y compris l’arrêt. La description devrait faire directement référence aux analyses détaillées des contraintes pour chacun des principaux composants, afin que d’autres évaluations puissent être réalisées si nécessaire.

Les renseignements devraient être suffisamment détaillés pour démontrer que les matériaux, les méthodes de fabrication, les techniques d’inspection, les conditions de chargement et les combinaisons des charges utilisées sont conformes à tous les règlements, les codes et les normes applicables. Les matériaux de l’enveloppe sous pression ou de l’enveloppe fluidique, les limites pression-température ou de température des fluides et l’intégrité de l’enveloppe sous pression ou de l’enveloppe fluidique du réacteur (y compris les facteurs de fragilisation) devraient également être pris en compte.

4.5.9 Systèmes de sûreté et systèmes de soutien en matière de sûreté

Les renseignements présentés dans la demande devraient démontrer que les systèmes de sûreté (selon la définition donnée dans le REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]) assurent l’arrêt sécuritaire du réacteur ou l’enlèvement de la chaleur résiduelle du cœur, ou limitent les conséquences d’IFP et d’AD. Le demandeur devrait décrire comment le système de soutien en matière de sûreté appuie l’exploitation d’un ou de plusieurs systèmes de sûreté.

Systèmes d’arrêt

La demande devrait décrire les moyens d’arrêter le réacteur, de réduire la puissance du réacteur à une faible valeur et de la maintenir pendant le temps nécessaire lorsque le système de contrôle de la puissance du réacteur et les caractéristiques inhérentes sont insuffisants ou incapables de maintenir la puissance du réacteur à l'intérieur des paramètres d'exploitation sûre (PES).

Systèmes et composants soutenant les fonctions de refroidissement d'urgence du cœur

La demande devrait décrire les systèmes et composants qui soutiennent les fonctions de refroidissement d'urgence du cœur du réacteur. Les systèmes qui alimentent en électricité ou en eau l'équipement utilisé pour le fonctionnement du système de refroidissement d'urgence du cœur devraient être considérés comme des systèmes de soutien en matière de sûreté.

Le demandeur devrait prendre des mesures pour que l'injection du liquide de refroidissement d'urgence, si elle est requise, ne puisse pas facilement être empêchée par l'opérateur.

La demande devrait démontrer que la sûreté de l'installation dotée de réacteurs ne serait pas touchée même si une partie ou la totalité du système de refroidissement d'urgence du cœur était actionnée par inadvertance.

Systèmes et composants soutenant les fonctions des systèmes évacuation d'urgence de la chaleur

La demande devrait décrire les systèmes et composants qui soutiennent les fonctions d'évacuation d'urgence de la chaleur qui évacue la chaleur résiduelle afin de respecter les limites de conception du combustible et les limites des conditions de l'enveloppe du système de refroidissement du réacteur conformément à la section sur les systèmes d'évacuation de la chaleur du REGDOC-2.5.2, *Conception d'installations dotées de réacteurs : Centrales nucléaires* [17].

Si l'évacuation d'urgence de la chaleur est requise pour atténuer les conséquences d'un AD, alors les fonctions d'évacuation d'urgence de la chaleur devraient être conçues conformément aux caractéristiques d'un système de sûreté.

Le demandeur devrait démontrer que les systèmes et composants d'évacuation d'urgence de la chaleur fonctionneront comme prévu peu importe les CAD.

Systèmes, structures et composants soutenant le confinement et les systèmes de confinement

Remarque : La plupart des renseignements ci-dessous s'appliquent aux structures de confinement. Certaines conceptions de réacteurs pourraient utiliser les capacités de confinement d'autres composants, comme le dispositif de confinement du combustible. Le demandeur ou le titulaire de permis peut proposer des solutions de rechange. Des renseignements sur les solutions de rechange sont fournis dans le REGDOC-3.5.3, *Principes fondamentaux de réglementation* [2].

La demande devrait décrire les systèmes et composants soutenant les fonctions de confinement en place afin de minimiser le rejet de matières radioactives dans l'environnement pour les divers états de fonctionnement et en cas d'AD. Les fonctions de confinement devraient aider à atténuer les conséquences des conditions additionnelles de dimensionnement (CAD). De plus, ces fonctions devraient faire partie du système de sûreté et pourraient comprendre des caractéristiques de conception complémentaires. La demande devrait couvrir l'ensemble des états de fonctionnement et des conditions d'accident et inclure les codes et normes applicables, conformément à la section sur le plan de l'installation du REGDOC-2.5.2, *Conception d'installations dotées de réacteurs : Centrales nucléaires* [17].

La description devrait fournir, le cas échéant, les renseignements suivants sur les systèmes et composants qui soutiennent les fonctions de confinement :

- les systèmes d’évacuation de la chaleur
- la conception fonctionnelle de l’enceinte de confinement secondaire
- le système d’isolation
- le système de ventilation
- les percées, orifices et pénétrations
- la protection contre la surpression et la sous-pression
- le contrôle des gaz combustibles
- les dispositions et mécanismes de ventilation et d’aération
- le système de gicleurs
- le système de détection des fuites

La demande devrait porter sur les exigences de dimensionnement pour chacun des systèmes indiqués ci-dessus. Elle devrait également inclure une présentation schématique de l’enveloppe de confinement, illustrant les limites de confinement pour chaque état de fonctionnement.

Systèmes de soutien en matière de sûreté

Les renseignements présentés devraient démontrer que les systèmes de soutien en matière de sûreté assurent la disponibilité des fonctions de sûreté fondamentales dans tous les états de fonctionnement, les AD et les CAD. La conception devrait comprendre des systèmes de soutien d’urgence en matière de sûreté en cas de perte du service normal et, s’il y a lieu, en cas de perte simultanée des systèmes de secours.

4.5.10 Systèmes d’alimentation électrique

Conformément aux sections sur les systèmes de soutien en matière de sûreté et les systèmes d’alimentation électrique du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17], la demande devrait préciser les fonctions et les caractéristiques de rendement requises pour chaque système d’alimentation électrique qui fournit une alimentation normale, de relève, d’urgence et de remplacement pour veiller à avoir :

- une capacité suffisante pour soutenir les fonctions de sûreté des charges connectées dans les divers états de fonctionnement, les AD et les CAD
- une fiabilité et une disponibilité proportionnelles à l’importance pour la sûreté des charges connectées

4.5.11 Instrumentation et contrôle

La demande devrait décrire les systèmes d’instrumentation et de contrôle (IC) utilisés pour appuyer le dossier de sûreté de l’installation. Dans le but d’assurer la sûreté de l’installation dotée de réacteurs et de rassembler des données appropriées sur l’état de l’installation, le demandeur devrait prévoir une instrumentation pour surveiller et contrôler les variables et les systèmes de l’installation dotée de réacteurs dans les divers états de fonctionnement, les AD et les CAD.

Pour de plus amples renseignements, consulter les sections suivantes du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17] :

- la section pour les exigences et l’orientation générales
- la section pour les exigences et l’orientation concernant la fiabilité et le partage
- la section pour les exigences et l’orientation concernant les facteurs humains

4.5.12 Installations de commande

La demande devrait décrire des installations de commande, y compris la salle de commande principale, la salle de commande auxiliaire et les installations de soutien d’urgence. Elle devrait démontrer que les installations de commande sont conformes aux sections sur les facteurs humains et les salles de commande du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17] en mettant l’accent sur les interfaces humain/machine et le concept des groupements de sûreté.

La demande devrait fournir les renseignements précis suivants (il est à noter que certains renseignements seront préliminaires) :

- la classe de sûreté de chaque système d’information qui est important pour la sûreté
- la liste des paramètres mesurés
- l’emplacement physique des capteurs
- l’enveloppe de qualification de l’équipement (définie d’après les conditions les plus contraignantes dans les états de fonctionnement ou les conditions d’accident)
- la durée pendant laquelle le fonctionnement fiable des capteurs est requis

Si les paramètres mesurés sont traités par un ordinateur, la demande devrait décrire ce qui suit :

- les caractéristiques de tout logiciel (par exemple, fréquence de balayage, validation des paramètres et vérification inter-canaux des capteurs) utilisé pour filtrer les données, établir les tendances ou lancer des alarmes
- le stockage à long terme des données et des affichages, et la façon dont cette information sera mise à la disposition des opérateurs dans la salle de commande principale et dans la salle de commande auxiliaire
- les conséquences de la défaillance des ordinateurs de l’installation dotée de réacteurs et les stratégies d’atténuation mises au point afin de fournir aux opérateurs les informations essentielles
- des moyens pour réaliser la synchronisation des différents systèmes informatiques si le traitement et le stockage des données sont réalisés par plusieurs ordinateurs

La description devrait porter sur les systèmes, l’équipement, l’approvisionnement et les procédures d’habitabilité qui sont en place afin de garantir que les travailleurs essentiels de l’installation dotée de réacteurs, y compris les employés des salles de commande principale et auxiliaire, peuvent demeurer à leur poste, faire fonctionner l’installation dotée de réacteurs en toute sécurité et dans tous les états de fonctionnement, et maintenir l’état sûr de l’installation dotée de réacteurs dans toutes les conditions d’accident envisagées dans le dossier de sûreté.

La demande devrait indiquer des voies d’évacuation d’urgence et des moyens de communication. Elle devrait décrire comment les travailleurs se déplaceront de la salle de commande principale à la salle de commande auxiliaire lorsque les circonstances l’exigeront, et démontrer que cet itinéraire est dûment qualifié pour garantir un passage en toute sécurité dans ces circonstances. En plus des systèmes d’habitabilité des salles de commande, cette section devrait porter sur :

- le blindage
- les systèmes de purification de l’air
- les systèmes de contrôle des conditions climatiques
- la capacité d’entreposage de nourriture et d’eau, s’il y a lieu

4.5.13 Système d’alimentation en vapeur d’eau (si applicable)

En fonction de l’installation dotée de réacteurs proposée, le demandeur devrait fournir des renseignements sur la conception du système d’alimentation en vapeur, y compris les conduites de vapeur, la tuyauterie et les cuves des systèmes de vapeur et d’eau d’alimentation et les groupes turbo-alternateurs. Le demandeur devrait établir une marge suffisante dans la conception, de sorte que les limites de l’enveloppe sous pression ne seront pas dépassées peu importe l’état de fonctionnement et les AD.

La demande devrait démontrer que la tuyauterie et les cuves sont séparées des systèmes électriques et de contrôle, dans la mesure du possible.

La demande devrait démontrer que les turbo-alternateurs sont munis de systèmes de protection pour réduire au minimum la possibilité de missiles provoqués par une rupture de turbine frappant des OSC importants pour la sûreté.

4.5.14 Systèmes auxiliaires

La demande devrait décrire les systèmes auxiliaires, y compris les exigences liées à leur dimensionnement. Elle devrait aussi décrire tout autre système auxiliaire dont le fonctionnement pourrait influer sur la sûreté de cette dernière, et qui n’a pas été traité ailleurs dans la demande (p. ex. les systèmes de communication et d’éclairage).

Ces systèmes d’alimentation en eau qui soutiennent les OSC importants pour la sûreté ou les fonctions de sûreté devraient répondre aux attentes du système de soutien en matière de sûreté.

Systèmes d’alimentation en eau

En fonction de l’installation dotée de réacteurs proposée, le demandeur devrait fournir des renseignements sur les systèmes d’alimentation en eau associés à l’installation dotée de réacteurs, y compris les systèmes d’eau de service de l’installation dotée de réacteurs, le circuit de refroidissement des systèmes auxiliaires du réacteur, le système d’appoint pour l’eau déminéralisée, le circuit d’eau de refroidissement du condenseur, les systèmes d’alimentation en eau pour la protection-incendie, la source froide finale et les réservoirs de stockage des condensats.

La demande devrait décrire les exigences en matière de fiabilité et l’importance sur le plan de la sûreté de chacun des systèmes d’alimentation en eau, compte tenu de toute déclaration dans le dossier de sûreté au sujet de leur disponibilité pour fournir le refroidissement.

Transfert de chaleur vers une source froide ultime

La demande devrait décrire les systèmes permettant de transférer la chaleur résiduelle des OSC importants pour la sûreté vers une source froide ultime.

Systèmes auxiliaires

La demande devrait décrire les systèmes auxiliaires associés au système fonctionnel du réacteur, y compris, sans toutefois s’y limiter :

- les circuits d’air comprimé
- les systèmes de procédé et d’échantillonnage post-accident
- les systèmes de drainage de l’équipement et du plancher
- les systèmes de contrôle chimique et de contrôle des volumes
- le circuit d’épuration

La demande devrait aussi définir l’état d’arrêt garanti (EAG) qui soutiendra les activités d’entretien sécuritaire de l’installation dotée de réacteurs. Si des poisons solubles sont utilisés pour réaliser un EAG, la demande devrait être conforme à la section sur l’état d’arrêt garanti du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17].

Systèmes de chauffage, de ventilation et de conditionnement d’air

La demande devrait décrire les systèmes de chauffage, de ventilation et de conditionnement d’air (CVCA) de l’installation dotée de réacteurs. La description devrait aussi porter sur les installations de commande, la zone des piscines de stockage du combustible usé, l’aire de stockage des déchets secondaires et radioactifs, le bâtiment de la turbine (dans les réacteurs à eau bouillante), ainsi que les systèmes de ventilation pour les systèmes de sûreté, entre autres.

L’importance pour la sûreté de tout système de CVCA validé dans l’analyse de sûreté de l’installation dotée de réacteurs devrait être clairement établie, notamment toutes les dépendances de fonctionnalité communes liées à la sûreté, comme le système de conditionnement d’air d’une salle d’équipement qui peut contenir de multiples divisions ou regroupements de systèmes de soutien.

4.5.15 Manutention et entreposage du combustible

La demande devrait comprendre une description des systèmes de manutention et d’entreposage du combustible conformément à la section sur la manutention et l’entreposage du combustible du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17], y compris des renseignements détaillés sur :

- la surveillance et les alarmes
- la prévention de la criticité
- le blindage, la manutention, l’entreposage, le refroidissement, le transfert et le transport du combustible irradié et non irradié (**remarque :** les aspects de l’interface humain-machine de la manutention de l’entreposage du combustible devraient être conformes à la section sur les facteurs humains du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17])

La demande devrait aussi comprendre une description des méthodes de détection du combustible défectueux dans le réacteur, conformément à la section sur la détection de combustible défectueux du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [179].

4.5.16 Traitement et contrôle des déchets

Dans la mesure du possible la demande devrait :
- décrire la façon de réduire au minimum la production de déchets radioactifs et dangereux
- décrire la façon de caractériser, de contrôler, de manipuler, de conditionner et d’évacuer ces déchets
- indiquer quels systèmes sont ou seront en service avant le chargement initial du combustible
- présenter un calendrier pour concevoir et mettre en œuvre les systèmes restants

L’information devrait être conforme aux sections suivantes du REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17] :
- la section pour la conception des systèmes de traitement et de contrôle des déchets
- les sections concernant la manutention sécuritaire des déchets de tous types qui sont produits à toute étape du cycle de vie de l’installation dotée de réacteurs, de la construction à la mise en service
- la section concernant les facteurs humains

La demande devrait également décrire comment les rejets à l’intérieur de l’installation dotée de réacteurs et dans l’environnement seront surveillés et contrôlés de manière à ce qu’ils demeurent à l’intérieur des limites prescrites.

4.6 Aptitude fonctionnelle

Le DSR Aptitude fonctionnelle englobe les activités qui ont une incidence sur l’état physique des structures, systèmes et composants afin de veiller à ce qu’ils demeurent efficaces au fil du temps. Ce domaine comprend les programmes qui assurent la disponibilité de l’équipement pour exécuter la fonction visée par sa conception lorsque l’équipement doit servir.

Les considérations en matière d’aptitude fonctionnelle sont traitées à la section 4.5 portant sur la conception matérielle, et les considérations en matière de mise en service sont traitées à la section 4.3 portant sur la conduite de l’exploitation.

4.7 Radioprotection

Le DSR Radioprotection englobe la mise en œuvre d’un programme de radioprotection conformément au *Règlement sur la radioprotection*. Ce programme doit permettre de faire en sorte que les niveaux de contamination et les doses de rayonnement reçues par les personnes soient surveillées, contrôlées et maintenues au niveau ALARA.

Un renvoi des dispositions législatives aux sections applicables est fourni à l’annexe A.

La demande doit inclure un programme de radioprotection et devrait démontrer comment la conception de ce programme correspond aux risques radiologiques liés aux activités autorisées ou rencontrés au cours de celles-ci. La demande doit également décrire comment les risques radiologiques seront surveillés et contrôlés pendant les travaux de construction, le cas échéant.

Pour de plus amples renseignements et une orientation détaillée sur la radioprotection, y compris l’élaboration des programmes de radioprotection et sur la détermination des doses reçues par les travailleurs, voir le REGDOC-2.7.1, *Radioprotection* [25], et le REGDOC-2.7.2, *Dosimétrie, tome I : Détermination de la dose professionnelle* [26].

4.8 Santé et sécurité classiques

Le DSR Santé et sécurités classiques englobe la mise en œuvre d’un programme qui vise à gérer les dangers en matière de sécurité sur le lieu de travail et à protéger les travailleurs.

Ce DSR tient compte également des exigences du *Code canadien du travail, Partie II*, et du *Règlement canadien sur la santé et la sécurité au travail* ou des lois provinciales applicables en matière de santé et sécurité au travail. L’annexe A fournit un renvoi des dispositions législatives dérivées de la LSRN aux sections applicables.

4.8.1 Considérations générales

La demande devrait décrire le programme et la mise en œuvre de politiques visant à réduire au minimum le risque pour la santé et la sécurité des travailleurs que posent les dangers classiques (non radiologiques) sur les lieux de travail, y compris la gestion des dangers en matière de sécurité au travail et la protection du personnel.

Le demandeur devrait démontrer que le programme de santé et de sécurité au travail (SST) répond aux exigences énoncées dans toutes les lois provinciales et fédérales applicables. La demande devrait démontrer comment ce programme fait en sorte que tous les travailleurs, y compris les entrepreneurs, respectent les politiques et procédures du demandeur en matière de santé et de sécurité au travail.

La demande devrait démontrer que le demandeur dispose de politiques visant à :

- exécuter de façon appropriée les politiques et les procédures concernant la santé et la sécurité des travailleurs
- prendre les dispositions nécessaires pour protéger la santé et la sécurité des personnes, notamment en prenant des mesures afin :
  - de démontrer que le programme de SST en vigueur sur le site est bien surveillé
  - d’assurer la conformité aux exigences et aux règlements applicables en matière de SST
  - de donner une formation en SST appropriée aux personnes qui prennent part aux activités de SST
  - d’avoir les capacités nécessaires pour présenter des rapports, mener des enquêtes sur les incidents et les événements importants et déterminer leurs causes profondes
- mettre en place des mesures correctives pour éliminer les causes profondes cernées et vérifier que ces mesures ont été appliquées pour éviter que de tels incidents et événements se reproduisent

La demande devrait démontrer comment le demandeur établit les dangers potentiels en matière de SST, évalue les risques associés et met en place les matériaux, l’équipement, les programmes et les mesures nécessaires afin de gérer, de contrôler et de réduire efficacement ces risques. Le demandeur devrait démontrer que la manutention et l’entreposage des matières dangereuses respectent les exigences du Système d’information sur les matières dangereuses utilisées au travail (SIMDUT).

La description du programme de santé et de sécurité au travail, présentée dans la demande, devrait comprendre les inspections périodiques, les réunions de sécurité, les comités de SST et les activités d’amélioration continue.

La demande devrait décrire les mesures visant à surveiller le taux de gravité et la fréquence des accidents, les blessures entraînant des arrêts de travail, les blessures nécessitant des soins médicaux et les blessures invalidantes.

Pour de plus amples renseignements, consulter le REGDOC-2.8.1, *Santé et sécurité classiques* [27].

4.9 Protection de l'environnement

Le DSR Protection de l'environnement englobe les programmes qui servent à détecter, à contrôler et à surveiller tous les rejets de substances radioactives et dangereuses qui proviennent des installations ou des activités autorisées, ainsi que leurs effets sur l'environnement.

Un renvoi des dispositions législatives aux sections applicables est fourni à l'annexe A.

4.9.1 Considérations générales

La demande doit comprendre un ensemble complet de mesures de protection de l'environnement qui respectent les exigences du REGDOC-2.9.1, *Protection de l'environnement : Principes, évaluations environnementales et mesures de protection de l'environnement* [28]. La demande devrait comprendre des renseignements détaillés sur les effets environnementaux potentiels découlant des activités de construction et de mise en service.

La demande devrait présenter un calendrier et des jalons proposés pour l'élaboration de dispositions visant à assurer la protection de l'environnement pendant la phase de construction. Elle devrait également comprendre une description de toute mesure de protection de l'environnement proposée qui s'appliquerait pendant la mise en service avec combustible et l'exploitation de l'installation dotée de réacteurs.

La demande devrait énumérer et décrire l'ensemble des normes, des recommandations ou des critères qui ont été appliqués pour protéger l'environnement.

4.9.2 Contrôle des effluents et des émissions (rejets)

La demande devrait décrire le programme de surveillance des effluents qui sera l'indicateur principal du rendement de l'installation dotée de réacteurs pour ce qui est des rejets dans l'air, dans les eaux de surface, dans les eaux souterraines et dans le sol attribuable à l'exploitation de l'installation ainsi qu'aux activités de gestion des déchets. Pour de plus amples renseignements, consulter la norme CSA N288.5, *Programmes de surveillance des effluents aux installations nucléaires de catégorie* I *et aux mines et usines de concentration d'uranium* [29].

Le demandeur devrait démontrer que le programme englobe toutes les mesures à effectuer relativement à la surveillance des rejets de substances radioactives et dangereuses pouvant entraîner des effets sur l'environnement. La demande devrait décrire comment le programme intègre toutes les routines d'échantillonnage, de mesure et d'analyse des substances radioactives et dangereuses exécutées sur le site, ainsi que les paramètres physiques.

La demande devrait comprendre des renseignements détaillés sur :

- les mesures qui seront prises pour déterminer les rejets potentiels ou prévus de substances nucléaires et dangereuses dans l'environnement
- les critères établis pour déterminer les substances radioactives et dangereuses qui seront surveillées, et les limites de détection qui seront mises en place pour vérifier le rendement des mesures de prévention et de contrôle prises pour gérer les rejets, incluant :
  - le cas échéant, le demandeur devrait fournir de l'information sur la surveillance des rejets réguliers d'effluents radioactifs et de substances dangereuses (tels que le SO_2, le NO_2, le

CO_2, l’ammoniac, l’hydrazine, le chlore, la morpholine et les substances appauvrissant la couche d’ozone)

- la détermination des limites de rejet autorisées ou proposées, les seuils d’intervention ainsi que les objectifs opérationnels visant les rejets, et les mesures prises pour les atteindre
- les systèmes d’alarme fournis pour répondre à tout rejet imprévu de substances nucléaires ou dangereuses
- les objectifs en matière de disponibilité pour les différents dispositifs de surveillance, et un programme d’entretien qui assurera le rendement continu de l’équipement de surveillance en fonction des objectifs en matière de disponibilité
- les documents sur la qualification des travailleurs et le programme de formation destiné au personnel spécialisé et aux entrepreneurs participant à la mise en œuvre du programme de surveillance des effluents
- les documents d’assurance et de contrôle de la qualité à respecter au moment d’exécuter des tâches définies de surveillance
- les documents sur les procédures d’échantillonnage, les méthodes d’analyse, l’étalonnage de l’équipement et la gestion des données
- les documents qui décrivent le processus de vérification et d’examen pour chaque élément du programme de surveillance des effluents
- une liste de tous les SSC qui constituent des mesures de contrôle importantes (p. ex. les barrières techniques, les systèmes de traitement des eaux usées, les systèmes technologiques de contrôle de la pollution de l’air, les équipements de surveillance des déchets liquides et les équipements de surveillance des cheminées); voir aussi la section 4.5, Conception matérielle
- le programme d’entretien établi pour assurer le rendement opérationnel continu des mesures de contrôle
- tout système d’alarme qui sera installé pour répondre à une défaillance des mesures de contrôle
- les méthodes qui seront utilisées pour :
  - préparer, stocker et conserver les données sur les rejets qui seront effectués régulièrement à partir du site
  - comparer ces données aux indicateurs de rendement disponibles (p. ex. les niveaux d’enquête interne, les seuils administratifs et autres objectifs et cibles de surveillance de l’environnement)
- la détermination des mesures qui seront prises pour mettre les renseignements appropriés à la disposition des autorités et du public (pour de plus amples renseignements, voir le REGDOC-3.2.1, *L’information et la divulgation publiques* [30])

Les renseignements présentés devraient démontrer de quelle façon les émissions radiologiques seront surveillées et contrôlées pour qu’elles soient conformes au principe ALARA.

Le demandeur devrait définir les seuils d’intervention en matière d’environnement (SIE) pour ce qui est des substances nucléaires et dangereuses rejetées dans l’atmosphère, dans l’eau ou dans les eaux usées (égouts). Pour de plus amples renseignements, consulter la norme CSA N288.8, *Établissement et mise en œuvre de seuils d’intervention pour les rejets dans l’environnement par les installations nucléaires* [31].

Le demandeur devrait indiquer les mesures de contrôle qui seront prises pour déterminer tout effet physique sur le biote, comme l’impaction et l’entraînement ou la perte d’habitat. Pour de plus amples renseignements, voir la norme CSA N288.9, *Ligne directrice pour la conception de programmes de captage et d'entraînement des poissons dans les installations nucléaires* [32].

4.9.3 Système de gestion de l'environnement

La demande devrait décrire le système de gestion de l'environnement établi pour assurer la protection de l'environnement tout au long de l'exploitation. Pour de plus amples renseignements, consulter les documents suivants :

- REGDOC-2.9.1, *Principes, évaluations environnementales et mesures de protection de l'environnement* [28]
- CAN/CSA-ISO 14001, *Systèmes de management environnemental – Exigences et lignes directrices pour son utilisation* [33]

La description du système de gestion de l'environnement devrait comprendre des renseignements sur les aspects suivants :

- la gestion des émissions
- la gestion des déversements
- l'évaluation des terres et la gestion de la remédiation
- la gestion des déchets
- la gestion des biphényles polychlorés (BPC)
- la gestion des substances appauvrissant la couche d'ozone
- la gestion des incidences environnementales
- les limites des émissions radiologiques et les seuils d'intervention
- la surveillance de la radioactivité dans les effluents
- la gestion du programme de surveillance environnementale et de contrôle radiologique hors site
- la gestion des effets néfastes sur les populations de poissons (impaction et entraînement du poisson et effets thermiques)

4.9.4 Évaluation et surveillance

La demande devrait décrire les effets prévus de l'évaluation des risques environnementaux et le système de surveillance associé proposé pour l'emplacement pendant les travaux de construction. Pour en savoir plus, consulter les documents suivants :

- REGDOC-2.9.1, *Protection de l'environnement : Principes, évaluations environnementales et mesures de protection de l'environnement* [28]
- CSA N288.4, *Programmes de surveillance de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium* [34]
- CSA N288.5, *Programmes de surveillance des effluents aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium* [29]
- CSA N288.6, *Évaluation des risques environnementaux aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium* [35]
- CSA N288.9, *Ligne directrice pour la conception de programmes de captage et d'entraînement des poissons dans les installations nucléaires* [32]

La demande devrait également mettre à jour, le cas échéant, la description des caractéristiques environnementales qui ont été incluses dans la demande de permis de préparation de l’emplacement pour établir les caractéristiques environnementales de base de l’emplacement et des environs.

La description devrait être suffisamment détaillée afin de fournir les renseignements nécessaires pour appuyer les mesures d’urgence prises en cas d’événements externes, pour soutenir un bilan périodique de la sûreté sur le site et pour élaborer des modèles de dispersion des matières radioactives. La description devrait également servir à confirmer que l’ensemble des dangers particuliers propres au site ont été pris en compte.

4.10 Gestion des urgences et protection-incendie

Le DSR Gestion des urgences et protection-incendie englobe les plans de mesures d'urgence et les programmes de préparation aux situations d'urgence qui doivent être en place pour permettre de faire face aux urgences et aux conditions inhabituelles. Il comprend également tous les résultats de la participation aux exercices.

Remarque : Ce DSR comprend les interventions classiques en cas d'urgence et d'incendie. Les aspects de la protection-incendie liés à l'exploitation, à la conception et à l'analyse sont quant à eux traités dans les DSR appropriés (Conduite de l'exploitation, Analyse de la sûreté ou Conception matérielle).

Un renvoi des dispositions législatives aux sections applicables est fourni à l'annexe A.

4.10.1 Considérations générales

Le demandeur doit fournir des détails sur le programme de préparation aux situations d'urgence qu'il propose de mettre en œuvre aux termes du permis de construction d'une installation dotée de réacteurs. Le programme de préparation aux situations d'urgence doit répondre à toutes les exigences propres à la phase de construction énoncées dans les documents suivants :

- REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service* [8]
- REGDOC-2.10.1, *Préparation et intervention relatives aux urgences nucléaires* [36]
- CSA N1600, *Exigences générales relatives aux programmes de gestion des urgences nucléaires* [37]

La demande doit présenter des calendriers et des jalons proposés pour l'élaboration de dispositions concernant la préparation aux situations d'urgence et la protection-incendie pendant la mise en service avec combustible et l'exploitation de l'installation dotée de réacteurs.

Remarque : The applicant can develop nuclear emergency plans in stages, leading to a future licence application to load nuclear fuel into the reactor. However, a comprehensive nuclear emergency program as detailed in REGDOC-2.10.1 [36] must be established prior to loading nuclear fuel into a reactor.

4.10.2 Préparation et intervention en cas d'urgence nucléaire

Les dispositions de la demande en matière de préparation aux situations d'urgence et de protection-incendie doivent tenir compte de l'emplacement de l'installation (installation entièrement nouvelle, ou site existant d'une installation dotée de réacteurs, comme une centrale nucléaire existante).

La demande doit décrire tout événement d'origine naturelle ou artificielle, qui fait partie du dimensionnement ou qui est hors dimensionnement, et qui aurait une incidence sur les exigences en matière de gestion des urgences (p. ex. les feux de forêt, les séismes, les conditions météorologiques extrêmes [comme les tornades et les inondations], les nuages de fumée toxique, les explosions et les écrasements d'avion).

La demande devrait décrire comment le demandeur envisage de tenir les exercices et les manœuvres d'urgence décrits dans son plan d'intervention en cas d'urgence nucléaire, si cela s'applique à la phase de construction.

La demande doit décrire toutes les conditions inhabituelles et non radiologiques à l’installation, pour lesquelles le programme de préparation aux situations d’urgence a été établi.

Pour les demandes visant la construction d’une nouvelle installation dotée de réacteurs sur le site d’une installation dotée de réacteurs existante, la demande doit inclure des procédures d’urgence détaillées pour le site de construction si une situation d’urgence découlant de l’installation existante touche le site de construction de la nouvelle installation dotée de réacteurs. La demande devrait répondre aux critères suivants :

La description devrait :

- tenir compte des situations d’urgence qui pourraient menacer la sécurité des travailleurs sur le site, l’environnement et la population
- inclure des procédures d’urgence pour intervenir en cas d’incendie, d’urgence médicale, de déversement dans l’environnement, de catastrophe naturelle, de sauvetage, d’accident hors site qui pourrait toucher le site de construction, et de toute autre situation d’urgence ou accident qui pourrait survenir
- comprendre des renseignements décrivant les liens avec les plans provinciaux d’intervention en cas d’urgence nucléaire et la coordination avec les municipalités et les états étrangers à proximité de l’installation dotée de réacteurs lors de la mise en œuvre du plan d’urgence et des mesures de protection connexes
- s’il y a lieu, comprendre des renseignements décrivant les liens avec les plans provinciaux d’intervention en cas d’urgence nucléaire et la coordination avec les municipalités et les états étrangers à proximité de l’installation dotée de réacteurs lors de la mise en œuvre du plan d’urgence et des mesures de protection connexes
- fournir des renseignements sur la proximité de l’installation dotée de réacteurs aux aéroports, aux chemins de fer, aux routes et aux services d’urgence

La description du plan de préparation aux urgences devrait comprendre :

- le fondement de la planification d’urgence
- la gestion des programmes
- l’organisation chargée de la préparation et de l’intervention en cas d’urgence, y compris le personnel, les rôles et responsabilités ainsi que l’activation de l’organisation
- la formation, les exercices et les manœuvres pour l’intervention d’urgence
- les procédures d’urgence, y compris :
  - la validation des plans et des procédures d’intervention en cas d’urgence
  - la tenue à jour des documents
  - la communication de l’information
- l’activation et l’arrêt des interventions d’urgence
- la protection des travailleurs et de l’équipement de l’installation
- l’entretien des installations et de l’équipement
- les ententes, les plans et les procédures connexes entre les organismes d’intervention sur le site et hors site

4.10.3 Programme de protection contre les incendies

La demande devrait contenir un programme de protection contre les incendies qui décrit comment les activités de protection-incendie seront mises en œuvre, gérées et surveillées pendant la phase de construction pour garantir que les risques d’incendie sont minimisés.

4.11 Gestion des déchets

La gestion des déchets inclut aussi bien les substances nucléaires que les substances dangereuses qui sont utilisées ou produites au cours d’une activité autorisée et qui peuvent présenter un danger pour l’environnement ou pour la santé et la sécurité des personnes.

Pour l’étape de construction, le demandeur devrait déterminer la façon de gérer les substances dangereuses existantes sur le site qui ont été relevées durant le processus d’évaluation de l’emplacement, ainsi que les substances dangereuses qui seront produites pendant les activités prévues dans le permis de construction.

Lorsqu’une contamination radioactive excédant les quantités d’exemption provenant d’installations ou d’activités préexistantes constitue une éventuelle préoccupation, le demandeur doit satisfaire aux sections pertinentes du REGDOC-2.11.1, *Gestion des déchets, tome I : Gestion des déchets radioactifs* [38].

Un renvoi des dispositions législatives aux sections applicables est fourni à l’annexe A.

4.11.1 Substances dangereuses et déchets dangereux

Le demandeur doit fournir les renseignements suivants :

- la quantité et les caractéristiques physiques (y compris les dangers pour la santé et la sécurité) de chaque substance ou déchet, y compris les sous-produits
- la liste appropriée des règlements qui régissent le contrôle de toutes les substances ou tous les sous-produits réglementés ou contrôlés
- le transport, l’entreposage et l’utilisation des substances dangereuses
- le traitement et l’évacuation des déchets dangereux

Le demandeur devrait caractériser toutes les substances et tous les déchets dangereux dans une liste qui comprend les éléments suivants :

- le nom et l’origine de la substance ou du déchet dangereux
- la quantité ou le volume prévu et la forme que la substance/le déchet devrait prendre
- les sous-produits pouvant émaner :
  - de la substance ou du déchet dangereux
  - de toute interaction entre les substances ou les déchets dangereux ou entre les sous-produits possibles
- les dangers que présentent la substance dangereuse, le déchet dangereux ou leurs sous-produits pour les travailleurs et la population qui pourraient y être exposés
- la façon dont la substance dangereuse, le déchet dangereux ou leurs sous-produits seront traités ou évacués sur le site

4.11.2 Réduction des déchets

La demande devrait décrire les mesures prises pour minimiser l’accumulation des déchets dangereux produits durant la construction.

La demande devrait décrire les méthodes utilisées, notamment les mesures de conception et la technologie, faisant partie de la conception du réacteur afin de réduire à la source la production de déchets radioactifs durant l’exploitation.

4.11.3 Pratiques de déclassement

Lors de la construction, le demandeur doit considérer deux aspects du déclassement :

- la construction sous l’angle du déclassement
- les activités visées par le permis de construction : un plan préliminaire de déclassement et une garantie financière qui couvrent l’ensemble des travaux et les coûts connexes pour que le site soit remis de l’état prévu à la fin du permis à l’état final convenu (ce qui inclut la remise du site dans son état initial, si le projet est interrompu).

Le plan préliminaire de déclassement pour les travaux doit être conforme au REGDOC-2.11.2, *Déclassement* [43].

Pour d’autre orientation sur le déclassement, consulter le document REGDOC-3.3.1, *Garanties financières pour le déclassement des installations nucléaires et la cessation des activités autorisées* [44].

4.12 Sécurité

Le DSR Sécurité englobe les programmes nécessaires pour mettre en œuvre et soutenir les exigences en matière de sécurité stipulées dans les règlements, le permis, les ordres ou les exigences visant l’installation ou l’activité.

Un renvoi des dispositions législatives aux sections applicables est fourni à l’annexe A.

4.12.1 Considérations générales

La demande doit décrire un programme de sécurité qui répond aux exigences des documents suivants :
- REGDOC-2.1.2, *Culture de sûreté* [10]
- REGDOC-2.12.1, *Sites à sécurité élevée, tome II : Critères portant sur les systèmes et les dispositifs de protection physique* [41] (document réglementé, disponible sur demande selon le principe du besoin de savoir)
- REGDOC-2.12.2, *Cote de sécurité donnant accès aux sites* [42]
- REGDOC-2.12.3, *La sécurité des substances nucléaires : sources scellées et matières nucléaires de catégories I, II et III* [4]
- REGDOC-2.2.4, *Aptitude au travail, tome II : Gérer la consommation d’alcool et de drogues* [13]
- REGDOC-2.2.4, *Aptitude au travail, tome III Aptitudes psychologiques, médicales et physiques des agents de sécurité nucléaire* [43]

Pour de plus amples renseignements, consulter le document de l’AIEA, Collection Sécurité nucléaire, n° 35-G, *La sécurité tout au long de la durée de vie d’une installation nucléaire* [44].

Comme la construction peut comprendre la mise en service sans combustible (phase A), les dispositions de sécurité de la demande doivent traiter des mesures requises pour protéger l’installation dotée de réacteurs tout au long de la construction et de la mise en service sans combustible. Pour de plus amples renseignements sur la protection des OSC pendant la construction et sur les méthodes pour détecter et prévenir les conditions susceptibles d’affecter la sécurité du site, consulter le REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service* [8].

La demande devrait fournir des renseignements sur les éléments suivants du programme de sécurité, sans toutefois s’y limiter :
- évaluation des menaces et des risques (EMR)
- installations et équipement
- pratiques en matière de sécurité
- arrangements en matière d’intervention
- formation et qualification en matière de sécurité

4.12.2 Cybersécurité

The application should describe a cyber security program that ensures digital computer-based systems or components that are subject to cyber security requirements are protected from cyber attacks. La demande devrait tenir compte des cybermenaces internes et externes.

La demande devrait décrire la façon dont le programme de cybersécurité est conçu, mis en œuvre et tenu à jour afin d'être efficace. Elle devrait fournir des renseignements sur les éléments de programme suivants, sans toutefois s'y limiter :

- la stratégie défensive et l'architecture de sécurité
- les politiques et les procédures
- l'identification et la classification des biens
- les rôles et les responsabilités des parties concernées
- les contrôles de sécurité
- la sensibilisation et la formation
- la gestion de la configuration
- la coordination avec d'autres programmes
- les procédures d'intervention, le signalement des incidents et un plan de rétablissement
- l'examen et la tenue à jour du programme
- l'approche fondée sur le cycle de vie des biens cybernétiques

4.13 Garanties et non-prolifération

Le DSR Garanties et non-prolifération englobe les programmes et les activités nécessaires au succès de la mise en œuvre des obligations découlant des accords relatifs aux garanties du Canada et de l'Agence internationale de l'énergie atomique (AIEA) ainsi que de toutes les mesures dérivées du *Traité sur la non-prolifération des armes nucléaires* (AIEA INFCIRC/140) [45].

Un renvoi des dispositions législatives aux sections applicables est fourni à l'annexe A.

Ces dispositions législatives visent à veiller à ce que la CCSN puisse se conformer aux mesures de contrôle et aux obligations internationales auxquelles le Canada a convenu, y compris les accords relatifs aux garanties suivants :

- *Accord entre le gouvernement du Canada et l'Agence internationale de l'énergie atomique relatif à l'application de garanties dans le cadre du Traité sur la non-prolifération des armes nucléaires* (AIEA INFCIRC/164) [46]
- *Protocole additionnel à l'Accord entre le Canada et l'Agence internationale de l'énergie atomique relatif à l'application de garanties dans le cadre du Traité sur la non-prolifération des armes nucléaires* (AIEA INFCIRC/164/Add.1) [47]

4.13.1 Considérations générales

Avant ou en même temps que la demande de permis de construction d'une installation de réacteur, le demandeur doit remplir et soumettre à la CCSN le questionnaire sur les renseignements descriptifs en matière de garanties de l'AIEA (disponible sur demande auprès de la Division des garanties internationales de la CCSN). La CCSN encourage les demandeurs à remplir rapidement ce questionnaire, en particulier pour les nouvelles technologies pour lesquelles des mesures de garanties n'ont pas encore été élaborées. Pour plus d'informations, consulter REGDOC-2.13.1, *Garanties et comptabilité des matières nucléaires* [48].

Le demandeur doit fournir une description des dispositions qu'il a prises et qui permettront à la CCSN de s'acquitter des obligations du Canada et de fournir des renseignements à l'AIEA. La demande doit décrire comment les dispositions tiennent compte des exigences énoncées dans le REGDOC-2.13.2, *Importation et exportation* [49] et le REGDOC-2.13.1, *Garanties et comptabilité des matières nucléaires* [48], et sont conformes aux sections sur les garanties et sur la manutention et l'entreposage du combustible du REGDOC-2.5.2, *Conception d'installations dotées de réacteurs : Centrales nucléaires* [17]. Un réacteur en construction est considéré comme une « installation » au sens du REGDOC-2.13.1. La demande doit décrire comment le programme de garanties respecte les exigences du REGDOC relatives à l'équipement et aux sceaux de garantie, aux accès de l'AIEA, à la comptabilisation des matières nucléaires, à la communication de renseignements et à la conservation des dossiers pendant la phase de construction.

La demande devrait décrire les mesures liées aux bâtiments et aux structures du site, aux paramètres d'exploitation, ainsi qu'au flux et à l'entreposage des matières nucléaires, à compter des phases de conception et de mise en service de l'installation dotée de réacteurs jusqu'à la phase de déclassement et à l'abandon éventuel.

En ce qui concerne les installations dotées de réacteurs, le programme de non-prolifération se limite au suivi et à la déclaration des matières nucléaires de provenance étrangère et visées par des obligations à l'étranger.

Aux fins de la demande et de son examen, la propriété des documents variera entre l’AIEA, la CCSN et le demandeur :

- l’AIEA est chargée de l’approche générique en matière de garanties
- la CCSN est chargée :
  - d’assurer la coordination avec l’AIEA lors de l’élaboration de l’approche générique en matière de garanties
  - de négocier les accords de garanties avec l’AIEA pour l’installation du demandeur
  - en surveillant le respect, par le demandeur, des documents, exigences et obligations en matière de garanties
- le demandeur est chargé d’établir et de mettre en œuvre le programme de garanties

4.14 Emballage et transport

Le DSR Emballage et transport comprend les programmes reliés à l’emballage et au transport sûrs des substances nucléaires. S’il y a lieu, le demandeur doit décrire les mesures qui seront prises pour assurer le respect de toutes les exigences du *Règlement sur l’emballage et le transport des substances nucléaires* (*2015)* et du *Règlement sur le transport des marchandises dangereuses* de Transport Canada.

Si le demandeur propose de transporter du combustible sur le site aux termes du permis de construction, il doit respecter les exigences et l’orientation de la section sur l’emballage et le transport du REGDOC-1.1.3, *Guide de présentation d’une demande de permis : Permis d’exploitation d’une centrale nucléaire* [50].

5. Autres domaines de réglementation

Un renvoi des dispositions législatives aux sections applicables est fourni à l’annexe A.

5.1 Exigences relatives à la production de rapports

Le demandeur doit décrire comment les programmes, les processus et les procédures de production de rapports et d’établissement des tendances respectent les exigences du REGDOC-3.1.1, *Rapports à soumettre par les exploitants de centrale nucléaire* [51].

5.2 Programme d’information et de divulgation publiques

Le demandeur doit décrire comment son programme d’information et de divulgation publiques proposé (requis pour tous les titulaires de permis) répond aux exigences du document REGDOC-3.2.1, *L’information et la divulgation publiques* [30].

La description doit indiquer comment et avec quels outils le titulaire de permis communiquera avec le public, surtout les personnes vivant à proximité du site, ainsi que la nature et les caractéristiques générales des effets anticipés sur l’environnement et la santé et la sécurité des personnes pouvant être attribuables à l’exploitation de l’installation (cette information se trouve à l’alinéa 3j) « Demandes de permis – Dispositions générales » du *Règlement sur les installations nucléaires de catégorie I*).

Pour les nouvelles installations, le demandeur devrait démontrer que la mobilisation continue des parties appropriées s’est poursuivie tout au long des activités de construction et fait partie des activités d’exploitation.

5.3 Mobilisation des Autochtones

En tant qu’agent de la Couronne, la CCSN a la responsabilité de remplir l’obligation légale du Canada de consulter et, le cas échéant, d’accommoder les peuples autochtones lorsque les décisions de la CCSN peuvent avoir des effets négatifs sur les droits ancestraux ou sur les droits issus de traités, potentiels ou établis, des peuples autochtones. La CCSN s’est engagée à consulter de manière significative les groupes autochtones qui ont un intérêt à l’égard des installations et des activités réglementées par la CCSN.

Le REGDOC-3.2.2, *Mobilisation des Autochtones* [52] énonce les exigences et l’orientation à l’intention des titulaires de permis dont les projets proposés pourraient donner lieu à l’obligation de consulter de la Couronne. Bien que la CCSN ne puisse pas déléguer son obligation, elle peut déléguer les aspects procéduraux du processus de consultation aux titulaires de permis, le cas échéant. Les informations recueillies et les mesures proposées par les titulaires de permis pour éviter, atténuer ou compenser les effets négatifs peuvent être utilisées par la CCSN pour s’acquitter de ses obligations de consulter.

5.4 Recouvrement des coûts et garanties financières

Chaque titulaire de permis d’installation dotée de réacteurs au Canada est le premier responsable de la sûreté de son installation, notamment en prévoyant des ressources financières adéquates pour assurer la sûreté de chaque installation dotée de réacteurs tout au long de sa durée de vie.

5.4.1 Recouvrement des coûts

Un permis de construction d'une installation dotée de réacteurs est assujetti aux exigences de la Partie 2 du *Règlement sur les droits pour le recouvrement des coûts de la Commission canadienne de sûreté nucléaire*. Les demandeurs sont responsables du paiement des droits annuels déterminés par la CCSN. Les paiements sont habituellement demandés tous les trimestres et doivent être versés au receveur général du Canada.

Le demandeur devrait discuter des détails du montant et du plan de paiement avec la CCSN.

Pour de plus amples renseignements, consulter le *Règlement sur les droits pour le recouvrement des coûts de la Commission canadienne de sûreté nucléaire*.

5.4.2 Garanties financières

La demande devrait décrire les garanties financières pour les coûts liés au déclassement de l'installation dotée de réacteurs conformément aux exigences de la LSRN et du *Règlement général sur la sûreté et la réglementation nucléaires*. La demande devrait également inclure un renvoi au document justificatif concernant la valeur et la forme de la garantie financière.

Pour de plus amples renseignements concernant les garanties financières et le processus de délivrance de permis, consulter le document REGDOC-3.3.1, *Les garanties financières pour le déclassement des installations nucléaires et la cessation des activités autorisées* [40].

Annexe A : Dispositions législatives

Les renseignements soumis par le demandeur d'un permis de construction d'une installation dotée de réacteurs sont basés sur les dispositions pertinentes de la législation, y compris la *Loi sur la sûreté et la réglementation nucléaires* (LSRN) et ses règlements d'application. Le tableau A.1 énumère certaines sections pertinentes du présent guide de présentation d'une demande de permis, qui s'alignent sur les domaines de sûreté et de réglementation de la CCSN. Ce tableau sert à titre informatif et de référence; ainsi, il incombe aux demandeurs de s'assurer que toutes les exigences de la LSRN et de ses règlements touchant les diverses activités proposées sont traitées dans la demande.

Tableau A.1 : Dispositions de la LSRN et de ses règlements d'application, et sections pertinentes du présent guide de présentation d'une demande de permis

Loi / règlement	Disposition(s)	Section(s) dans le présent document
LSRN	24(4)	Tous les DSR (sections 4.1 à 4.14) 5, Autres questions d'ordre réglementaire
	26a), (e)	Tous les DSR (sections 4.1 à 4.14) 5, Autres questions d'ordre réglementaire
Règlement général sur la sûreté et la réglementation nucléaires (RGSRN)	3(1)a)	3.1.1, Nom et adresse professionnelle du demandeur
	3(1)b)	3.2.2, Énoncé du but principal
	3(1)c)	3.2.5, Substances nucléaires 4.9, Protection de l'environnement 4.11, Gestion des déchets
	3(1)d)	3.2.2, Énoncé du but principal 4.4, Analyse de la sûreté 4.5, Conception matérielle 4.10, Gestion des urgences et protection-incendie 4.11, Gestion des déchets 4.12, Sécurité
	3(1)e)	4.4, Analyse de la sûreté 4.5, Conception matérielle 4.7, Radioprotection 4.9, Protection de l'environnement 4.11, Gestion des déchets 4.12, Sécurité 4.14, Emballage et transport
	3(1)f)	4.7, Radioprotection
	3(1)g)	4.5, Conception matérielle 4.12, Sécurité 4.13, Garanties et non-prolifération
	3(1)h)	4.5, Conception matérielle 4.12, Sécurité 4.13, Garanties et non-prolifération

Loi / règlement	Disposition(s)	Section(s) dans le présent document
	3(1)i)	4.4, Analyse de la sûreté 4.5, Conception matérielle 4.7, Radioprotection 4.9, Protection de l'environnement 4.10, Gestion des urgences et protection-incendie (toutes les exigences relatives aux incendies) 4.11, Gestion des déchets 4.12, Sécurité
	3(1)j)	4.5, Conception matérielle 4.11, Gestion des déchets
	3(1)k)	3.1.7, Identification des personnes responsables de la gestion et du contrôle de l'activité autorisée 4.1, Système de gestion 4.2, Performance humaine 4.3, Conduite de l'exploitation
	3(1)l)	5, Autres questions d'ordre réglementaire
	3(1)m)	5, Autres questions d'ordre réglementaire
	3(2)	4.13, Garanties et non-prolifération
	10b)	4.13, Garanties et non-prolifération
	12(1)a)	4.1, Système de gestion 4.2, Gestion de la performance humaine 4.7, Radioprotection 4.10, Gestion des urgences et protection-incendie
	12(1)b)	4.2, Gestion de la performance humaine 4.7, Radioprotection 4.10, Gestion des urgences et protection-incendie
	12(1)c)	4.3, Conduite de l'exploitation 4.4, Analyse de la sûreté 4.5, Conception matérielle 4.7, Radioprotection 4.8, Santé et sécurité classiques 4.9, Protection de l'environnement 4.10, Gestion des urgences et protection-incendie 4.11, Gestion des déchets 4.12, Sécurité
	12(1)d)	4.7, Radioprotection 4.10, Gestion des urgences et protection-incendie

Loi / règlement	Disposition(s)	Section(s) dans le présent document
	12(1)e)	4.2, Gestion de la performance humaine 4.3, Conduite de l’exploitation 4.7, Radioprotection 4.10, Gestion des urgences et protection-incendie
	12(1)f)	4.3, Conduite de l’exploitation 4.4, Analyse de la sûreté 4.5, Conception matérielle 4.7, Radioprotection 4.9, Protection de l’environnement 4.10, Gestion des urgences et protection-incendie
	12(1)g)	4.10, Gestion des urgences et protection-incendie 4.12, Sécurité
	12(1)h)	4.10, Gestion des urgences et protection-incendie 4.12, Sécurité
	12(1)i)	4.13, Garanties et non-prolifération
	12(1)j)	4.2, Gestion de la performance humaine 4.12, Sécurité
	15	3.1.7, Identification des personnes responsables de la gestion et du contrôle de l’activité autorisée 4.1, Système de gestion
	15a)	3.1.4, Noms de toutes les personnes autorisées à représenter le demandeur auprès de la CCSN 3.1.9, Signataire autorisé
	15b)	3.1.4, Noms de toutes les personnes autorisées à représenter le demandeur auprès de la CCSN 3.1.7, Identification des personnes responsables de la gestion et du contrôle de l’activité autorisée
	17a)	4.2, Gestion de la performance humaine 4.3, Conduite de l’exploitation 4.7, Radioprotection 4.8, Santé et sécurité classiques 4.9, Protection de l’environnement
	17b)	4.2, Gestion de la performance humaine 4.3, Conduite de l’exploitation 4.7, Radioprotection 4.8, Santé et sécurité classiques 4.9, Protection de l’environnement

Loi / règlement	Disposition(s)	Section(s) dans le présent document
	17c)	4.1, Système de gestion 4.2, Gestion de la performance humaine 4.3, Conduite de l'exploitation 4.7, Radioprotection 4.8, Santé et sécurité classiques 4.9, Protection de l'environnement 4.12, Sécurité
	17d)	4.2, Gestion de la performance humaine 4.3, Conduite de l'exploitation 4.7, Radioprotection 4.8, Santé et sécurité classiques
	17e)	4.1, Système de gestion 4.2, Gestion de la performance humaine Formation du personnel 4.3, Conduite de l'exploitation 4.7, Radioprotection 4.8, Santé et sécurité classiques 4.9, Protection de l'environnement 4.12, Sécurité
	20a)	4.14, Emballage et transport
	20d)	4.13, Garanties et non-prolifération
	21	4.12, Sécurité
	21(1)a)	4.13, Garanties et non-prolifération
	21(1)b)	4.13, Garanties et non-prolifération
	22	4.12, Sécurité
	23	4.12, Sécurité
	23(2)	4.13, Garanties et non-prolifération
	27	[…conserver une copie de tous les renseignements concernant le permis d'exploitation qui sont présentés par le titulaire du permis à la Commission… voir la section 3] 4.1, Système de gestion
	28	4.1, Système de gestion
	28(1)	4.12, Sécurité
	29	4.3, Conduite de l'exploitation 4.7, Radioprotection 4.12, Sécurité 5.1, Exigences relatives à la production de rapports

Loi / règlement	Disposition(s)	Section(s) dans le présent document
	30	4.3, Conduite de l’exploitation 4.12, Sécurité 5.1, Exigences relatives à la production de rapports
	31	4.3, Conduite de l’exploitation 5.1, Exigences relatives à la production de rapports
	32	4.3, Conduite de l’exploitation 5.1, Exigences relatives à la production de rapports
Règlement sur les droits pour le recouvrement des coûts de la Commission canadienne de sûreté nucléaire	Toutes	5.4, Recouvrement des coûts et garanties financières
Règlement sur les installations nucléaires de catégorie I	3a)	3.2.3, Description du site 4.5, Conception matérielle 4.10, Gestion des urgences et protection-incendie 4.12, Sécurité
	3b)	3.2.3, Description du site 4.4, Analyse de la sûreté 4.5, Conception matérielle 4.12, Sécurité
	3c)	3.1.6, Preuve que le demandeur est le propriétaire du site…
	3d)	4.1, Système de gestion 4.4, Analyse de la sûreté 4.5, Conception matérielle
	3e)	3.2.5, Substances nucléaires et dangereuses 4.8, Santé et sécurité classiques 4.9, Protection de l’environnement 4.11, Gestion des déchets
	3f)	4.1, Système de gestion 4.2, Gestion de la performance humaine 4.8, Santé et sécurité classiques 4.10, Gestion des urgences et protection-incendie 4.11, Gestion des déchets
	3g)	4.9, Protection de l’environnement
	3h)	4.8, Santé et sécurité classiques 4.9, Protection de l’environnement
	3i)	4.5, Conception matérielle 4.12, Sécurité

Loi / règlement	Disposition(s)	Section(s) dans le présent document
	3j)	5, Autres questions d'ordre réglementaire
	3k)	4.11, Gestion des déchets
	5a)	4.5, Conception matérielle
	5b)	4.5, Conception matérielle 4.9, Protection de l'environnement
	5c)	4.3, Conduite de l'exploitation
	5d)	4.5, Conception matérielle
	5e)	4.5, Conception matérielle
	5f)	4.4, Analyse de la sûreté
	5g)	4.1, Système de gestion
	5h)	4.1, Système de gestion 4.12, Sécurité 4.13, Garanties et non-prolifération
	5i)	4.1, Système de gestion 4.2, Performance humaine 4.3, Conduite de l'exploitation 4.7, Radioprotection 4.9, Protection de l'environnement 4.10, Gestion des urgences et protection-incendie 4.11, Gestion des déchets 4.12, Sécurité 4.14, Emballage et transport
	5j)	4.7, Radioprotection 4.9, Protection de l'environnement 4.11, Gestion des déchets
	5k)	4.1, Système de gestion 4.5 Conception matérielle 4.7, Radioprotection 4.9, Protection de l'environnement 4.10, Gestion des urgences et protection-incendie 4.11, Gestion des déchets
	5l)	4.2, Performance humaine 4.7, Radioprotection
	5m)	4.2, Performance humaine 4.7, Radioprotection
	9	4.2, Gestion de la performance humaine
	10	4.2, Gestion de la performance humaine
	11	4.2, Gestion de la performance humaine
	12	4.2, Gestion de la performance humaine
	14	4.7, Radioprotection

Loi / règlement	Disposition(s)	Section(s) dans le présent document
	14(1)	4.1, Système de gestion 4.9, Protection de l’environnement 4.11, Gestion des déchets
	14(4)	4.1, Système de gestion
	14(5)	4.1, Système de gestion
Règlement sur le contrôle de l’importation et de l’exportation aux fins de la non-prolifération nucléaire	Toutes	4.13, Garanties et non-prolifération
Règlement sur la sécurité nucléaire	Toutes	4.5, Conception matérielle 4.12, Sécurité
	3b)	3.2.3, Description du site
	16	3.2.3, Description du site
	37(1), (2) et (3)	4.1, Système de gestion
	38	4.1, Système de gestion 4.2, Gestion de la performance humaine
Règlement sur les substances nucléaires et les appareils à rayonnement	5	4.7, Radioprotection
	8	4.7, Radioprotection
	20	4.7, Radioprotection
	23	4.7, Radioprotection
	36(1)a)	4.1, Système de gestion 4.12, Sécurité
	36(1)b)	4.1, Système de gestion
	36(1)c)	4.1, Système de gestion
	36(1)d)	4.1, Système de gestion 4.12, Sécurité
	36(1)e)	4.1, Système de gestion
Règlement sur l’emballage et le transport des substances nucléaires (2015)	Toutes	4.14, Emballage et transport

Loi / règlement	Disposition(s)	Section(s) dans le présent document
Règlement sur la radioprotection	Toutes	4.3, Conduite de l’exploitation 4.4, Analyse de la sûreté (toutes les exigences concernant la dose) 4.5, Conception matérielle 4.7, Radioprotection 4.9, Protection de l’environnement 4.11, Gestion des déchets

Annexe B : Domaines de sûreté et de réglementation

Les exigences réglementaires et les attentes de la CCSN visant le rendement en matière de sûreté des programmes sont groupées en trois domaines fonctionnels et en 14 domaines de sûreté et de réglementation (DSR). Ces DSR se divisent en domaines particuliers qui définissent les éléments clés des DSR. Ces éléments sont tous présentés dans le tableau B.1.

Tableau B.1 : Domaines fonctionnels, DSR et domaines particuliers de la CCSN

Domaine fonctionnel	Domaine de sûreté et de réglementation (DSR)	Domaine particulier
Gestion	1. Système de gestion	Système de gestion
		Organisation
		Examen de l’évaluation, de l’amélioration et de la gestion du rendement
		Expérience d’exploitation (OPEX)
		Gestion du changement
		Culture de sûreté
		Gestion de la configuration
		Gestion des documents
		Gestion des entrepreneurs
		Continuité des opérations
	2. Gestion de la performance humaine	Programme de performance humaine
		Formation du personnel
		Accréditation du personnel
		Examens d’accréditation initiaux et tests de requalification
		Organisation du travail et conception de tâches
		Aptitude au travail
	3. Conduite de l’exploitation	Réalisation des activités autorisées
		Procédures
		Rapport et établissement de tendances
		Rendement de la gestion des arrêts
		Paramètres d’exploitation sûre
		Gestion des accidents graves et rétablissement
		Gestion des accidents et rétablissement
Installation et équipement	4. Analyse de la sûreté	Analyse déterministe de la sûreté
		Analyse des dangers
		Étude probabiliste de sûreté
		Analyse de la criticité
		Analyse des accidents graves
		Gestion des dossiers de sûreté (y compris les programmes de R-D)
	5. Conception matérielle	Gouvernance de la conception
		Caractérisation du site
		Conception de l’installation
		Conception des structures

Domaine fonctionnel	Domaine de sûreté et de réglementation (DSR)	Domaine particulier
		Conception des systèmes
		Conception des composants
	6. Aptitude fonctionnelle	Aptitude fonctionnelle de l'équipement au service /Performance de l'équipement
		Entretien
		Intégrité structurale
		Gestion du vieillissement
		Contrôle chimique
		Inspections et essais périodiques
Processus de contrôle de base	7. Radioprotection	Application du principe ALARA
		Contrôle des doses des travailleurs
		Rendement du programme de radioprotection
		Contrôle des risques radiologiques
		Dose estimée au public
	8. Santé et sécurité classiques	Rendement
		Pratiques
		Sensibilisation
	9. Protection de l'environnement	Contrôle des effluents et des émissions (rejets)
		Système de gestion de l'environnement (SGE)
		Évaluation et surveillance
		Protection du public
		Évaluation des risques environnementaux
	10. Gestion des urgences et protection-incendie	Préparation et intervention en cas d'urgence classique
		Préparation et intervention en cas d'urgence nucléaire
		Préparation et intervention en cas d'incendie
	11. Gestion des déchets	Caractérisation des déchets
		Réduction des déchets
		Pratiques de gestion des déchets
		Plans de déclassement
	12. Sécurité	Installations et équipement
		Arrangements en matière d'intervention
		Pratiques en matière de sécurité
		Entraînements et exercices
	13. Garanties et non-prolifération	Contrôle et comptabilité des matières nucléaires
		Accès et assistance à l'AIEA
		Renseignements sur les activités et la conception
		Équipement en matière de garanties, confinement et surveillance
		Exportations et importations
	14. Emballage et transport	Conception et entretien des colis
		Emballage et transport
		Enregistrement aux fins d'utilisation

Annexe C : Objectifs d’examen d’une demande de permis de construction d’une installation dotée de réacteurs

Trois niveaux d’objectifs sont considérés au moment d’établir la portée de l’examen par le personnel de la CCSN d’une demande de permis de construction d’une installation dotée de réacteurs. On élabore ces objectifs pour aider à intégrer chacun des examens à une évaluation globale du caractère adéquat d’une demande de permis.

C.1 Objectifs du premier niveau

Les objectifs du premier niveau sont précisés au paragraphe 24(4) de la *Loi sur la sûreté et la réglementation nucléaires* (LSRN). Le plan de conception et d’exploitation de l’installation doit en outre porter sur les mesures d’atténuation définies dans le cadre des examens de l’environnement.

C.2 Objectifs du deuxième niveau

Les objectifs du deuxième niveau sont les suivants :

S **Objectif de sûreté de la conception :** La conception d’une installation dotée de réacteurs devrait inclure des mesures adéquates (afin de ne pas faire courir de risques indus) pour protéger l’environnement, préserver la santé et la sécurité des personnes, maintenir la sécurité nationale et respecter les obligations internationales que le Canada a assumées.

C **Objectif du programme de construction :** Des mesures adéquates devraient être prises pour que la construction de l’installation dotée de réacteurs se fasse de manière sûre et soit d’une qualité suffisante.

Q **Objectif relatif aux qualifications :** Le demandeur et toutes les entités engagées dans la conception, la construction et la mise en service de l’installation dotée de réacteurs devraient être qualifiés pour réaliser l’activité visée par le permis. Le programme et le calendrier de recrutement, de formation, de qualification et d’accréditation des travailleurs aux fins de l’exploitation et de l’entretien de l’installation dotée de réacteurs devraient être adéquats.

L’objectif de sûreté de la conception englobe une grande partie de l’objectif général en matière de sûreté nucléaire, tel qu’il est établi par l’Agence internationale d’énergie atomique (AIEA) et explicitement énoncé dans le REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17], voulant que les installations dotées de réacteurs « soient conçues et exploitées de manière à protéger les personnes, la société et l’environnement ».

L’objectif du programme de construction exprime les attentes de haut niveau à l’égard du programme de construction.

L’objectif relatif aux qualifications exprime les attentes de haut niveau relatives au besoin de disposer de personnes suffisamment compétentes pour assurer la conception, la construction et la mise en service de l’installation dotée de réacteurs. Il tient compte aussi des exigences du *Règlement sur les installations nucléaires de catégorie I* se rattachant à la formation, à la qualification et à l’accréditation des travailleurs.

C.3 Objectifs du troisième niveau

Essentiellement, respecter l’objectif de sûreté de la conception signifie satisfaire aux attentes pertinentes indiquées dans les documents :

- REGDOC-2.5.2, *Conception d’installations dotées de réacteurs : Centrales nucléaires* [17]
- REGDOC-2.4.1, *Analyse déterministe de la sûreté* [16]

Chacun des objectifs du deuxième niveau peut être subdivisé en objectifs du troisième niveau, qui sont assortis de méthodes d’évaluation plus précises. Lors de l’examen d’une demande de permis de construction d’une installation dotée de réacteurs, le personnel de la CCSN évalue si les objectifs sont atteints pour les domaines d’intérêt pertinents.

Les objectifs du troisième niveau se rapportant à l’objectif de sûreté de la conception sont les suivants :

OS1 La conception englobe toutes les mesures d’atténuation définies dans le cadre de l’examen de l’environnement et permet de s’assurer que le rendement en matière d’exploitation respecte toutes les exigences réglementaires concernant les rejets de substances nucléaires et dangereuses.

OS2 La conception respecte le principe ALARA.

OS3 La conception est conforme aux critères d’acceptation portant sur les doses et aux objectifs de sûreté.

OS4 La conception est conforme au principe de défense en profondeur.

OS5 Les fonctions de sûreté fondamentales sont tenues en compte adéquatement dans la conception.

OS6 La conception fournit des moyens adéquats pour atténuer et gérer les accidents.

OS7 Des dispositions adéquates ont été prises dans le cadre de la conception en ce qui trait à la sécurité et à la robustesse de la conception.

OS8 Le système de gestion défini dans les des programmes, politiques et procédures qui favorise une saine culture de sûreté est adéquat aux fins de la conception, de la construction et de la mise en service de l’installation dotée de réacteurs.

OS9 Le système de gestion défini dans les des programmes, politiques et procédures qui favorise une saine culture de sûreté est adéquat aux fins de l’exploitation et du déclassement futur de l’installation dotée de réacteurs.

OS10 Des mesures adéquates sont prises en matière de conception, d’infrastructure et de programmation dans le domaine des garanties.

Les objectifs du troisième niveau se rapportant à l’objectif du programme de construction sont les suivants :

OC1 Une assurance adéquate que toutes les activités englobant la construction/l’érection des structures et des systèmes et la fabrication/l’érection des composants sont réalisées par du personnel qualifié.

OC2 Des mesures adéquates ont été prises pour s’assurer que les règles et les règlements sont respectés durant les activités de fabrication, de construction et d’érection et que les activités de construction/d’érection sont réalisées de manière sûre.

OC3 Une assurance que la fabrication, l’érection et la construction sont d’une qualité adéquate et que des mesures appropriées ont été prises pour réduire le plus possible les écarts par rapport à la conception.

OC4 Une assurance que des plans adéquats pour la mise en service à blanc (avant le chargement du combustible) sont disponibles.

Les objectifs du troisième niveau se rapportant à l’objectif relatif aux qualifications sont les suivants :

OQ1 Le demandeur est qualifié pour superviser toutes les activités de conception, de construction et de mise en service qu’il réalise lui-même ou qui sont réalisées par des entrepreneurs ou des sous-traitants.

OQ2 Le demandeur dispose d’un nombre suffisant d’employés qualifiés pour surveiller toutes les activités de conception, de construction et de mise en service qu’il réalise lui-même ou qui sont réalisées par des entrepreneurs ou des sous-traitants.

OQ3 Tous les entrepreneurs et les sous-traitants participant à la conception, la construction et à la mise en service sont qualifiés pour réaliser leurs activités respectives.

OQ4 Le simulateur pleine échelle proposé pour la formation du personnel est adéquat.

Annexe D : Exemple de format de liste des documents justificatifs

Le demandeur devrait s'assurer que la demande de permis tient compte de tous les renseignements demandés dans le présent guide de présentation d'une demande de permis. Le demandeur est encouragé à établir la correspondance entre les renseignements fournis et les sections et sous-sections pertinentes du présent document. **Remarque :** Le demandeur aura déjà fourni des pièces justificatives dans une demande de permis pour la préparation de l'emplacement.

Pour ce qui est de ces documents et renseignements justificatifs, la demande devrait indiquer clairement les renseignements qui ont déjà été présentés, et fournir une liste des documents justificatifs.

D.1 Exemple de format (suggéré)

Le tableau ci-dessous présente un exemple de format que le demandeur pourrait utiliser pour établir la correspondance entre les renseignements justificatifs et le cadre des DSR. Ce tableau constitue également un exemple de format pour établir le renvoi aux renseignements applicables qui ont déjà été présentés à la CCSN.

Remarque : L'en-tête de colonne « Dans le MCP pour un avis écrit (O/N) », le demandeur indique si le document est mentionné dans l'actuel Manuel des conditions de permis (MCP) à titre de document nécessitant un avis écrit de changement à la CCSN.

Document		**Version**	**Dans le MCP pour un avis écrit (O/N)**	**Déjà présenté (O/N)**	**Sections et sous-section(s) pertinentes du REGDOC-1.1.2**
Identifiant	**Titre**				
					p. ex. 4.1

Annexe E: Exemple de format de liste des révisions des documents justificatifs

Si la version d'un document figurant dans les documents justificatifs a changé depuis la présentation précédente, le demandeur doit fournir à la CCSN le nouveau numéro de version, une copie de la nouvelle version et un résumé des principaux changements entre la nouvelle version et la version qui a été examinée par le personnel de la CCSN.

E.1 Exemple de format (suggéré)

Le tableau ci-dessous présente un exemple de format que le demandeur pourrait utiliser pour fournir une liste des documents justificatifs qui ont changé depuis la soumission précédente.

Remarque : L'en-tête de colonne « Dans le MCP pour un avis écrit (O/N) », le demandeur indique si le document est mentionné dans l'actuel Manuel des conditions de permis (MCP) à titre de document nécessitant un avis écrit de changement à la CCSN.

Document		**Numéro de la version originale**	**Dans le MCP pour un avis écrit (O/N)**	**Nouveau numéro de version**	**Résumé des modifications (utilisez autant de lignes que nécessaire)**
Identifiant	**Titre**				

Glossaire

Les définitions des termes utilisés dans le présent document figurent dans le REGDOC-3.6, *Glossaire de la CCSN*, qui comprend des termes et des définitions tirés de la *Loi sur la sûreté et la réglementation nucléaires*, de ses règlements d'application ainsi que des documents d'application de la réglementation et d'autres publications de la CCSN. Le REGDOC-3.6 est fourni à titre de référence et pour information.

Les termes suivants sont soit nouveaux, soit modifiés. À la suite de la consultation publique, la version définitive des termes et des définitions sera ajoutée à la prochaine version du REGDOC-3.6, *Glossaire de la CCSN.*

autorité compétente (AC) (*authority having jurisdiction (AHJ))*
Organisation, bureau ou agence de réglementation chargé d'approuver ou d'accepter les conceptions, les équipements, les matériaux, les installations ou les procédures conformément aux codes et aux normes applicables.
Remarque 1 : Au Canada, les autorités réglementaires sont la Commission canadienne de sûreté nucléaire (CCSN) et les autres agences provinciales ou fédérales qui ont compétence en la matière.
Remarque 2 : L'autorité compétente est également appelée « autorité réglementaire ».

ingénierie, approvisionnement et construction (IAC) *(engineering, procurement and construction [EPC])*
Forme courante de contrat utilisée pour réaliser des travaux de construction dans le cadre de projets d'infrastructure complexes et de grande envergure. Remarque : Cette expression peut également inclure la mise en service.

gestion de l'ingénierie, approvisionnement et construction (GIAC) *(engineering, procurement and construction management [EPCM])*
Arrangement contractuel dans lequel le client choisit un entrepreneur qui fournit des services de gestion pour l'ensemble du projet au nom du client.

IAC *(EPC)*
Voir « ingénierie, approvisionnement et construction ».

IACG *(EPCM)*
Voir « gestion de l'ingénierie, approvisionnement et construction ».

client informé *(informed customer)*
Concept qui décrit une organisation ayant la capacité (expertise et compétence) d'assurer une gestion, un contrôle et une surveillance efficaces de la sûreté nucléaire (santé et sécurité, protection de l'environnement, garanties et sécurité), y compris dans le cadre des travaux effectués en son nom par des entrepreneurs. L'organisation ainsi désignée a une compréhension et une connaissance claires de chaque produit ou service fourni, précise les exigences relatives à ces produits et services, supervise les travaux effectués en son nom par les entrepreneurs et procède à l'examen technique du résultat avant, pendant et après les travaux.

CGP+E *(PMC+C)*
Voir l'expression « consultant en gestion de projet ou entrepreneur ».

consultant en gestion de projet ou entrepreneur (CGP+E) *(project management consultant or contractor [PMC+C])*
Consultant ou entrepreneur qui, dans le cadre d’un contrat de gestion de projet, supervise les travaux réalisés par tous les entrepreneurs et fournisseurs afin de garantir le respect de la portée des travaux.

Niveau 1 *(Tier 1)*
Désigne les consultants en conception et le maître d’œuvre qui travaillent directement pour l’employeur (en d’autres mots, ils ont un contrat direct avec le client). Le maître d’œuvre peut avoir une chaîne limitée de ses propres fournisseurs.

Niveau 2 *(Tier 2)*
Entrepreneurs spécialisés qui fournissent divers services au maître d’œuvre (niveau 1) et aux fournisseurs principaux. Un spécialiste de niveau 2 est un sous-traitant travaillant pour le maître d’œuvre (niveau 1) ou l’un des principaux fournisseurs.

Références

La CCSN pourrait inclure des références à des documents sur les pratiques exemplaires et les normes, comme celles publiées par le Groupe CSA. Avec la permission du Groupe CSA, qui en est l'éditeur, toutes les normes de la CSA associées au nucléaire peuvent être consultées gratuitement à partir de la page Web de la CCSN « Comment obtenir un accès gratuit à l'ensemble des normes de la CSA associées au nucléaire ».

1. Commission canadienne de sûreté nucléaire (CCSN). REGDOC-1.1.5, *Renseignements supplémentaires pour les promoteurs de petits réacteurs modulaires*, Ottawa, Canada
2. CCSN. REGDOC-3.5.3, *Principes fondamentaux de réglementation*, Ottawa, Canada
3. CCSN. REGDOC-3.5.1, *Processus d'autorisation des installations nucléaires de catégorie I et des mines et usines de concentration d'uranium*, Ottawa, Canada
4. CCSN. REGDOC-2.12.3, *La sécurité des substances nucléaires : sources scellées et matières nucléaires de catégories I, II et III*, Ottawa, Canada
5. Secrétariat du Conseil du Trésor. *Politique sur la sécurité du gouvernement*, 2009, mise à jour en 2019.
6. CCSN. REGDOC-2.1.1, *Système de gestion*, Ottawa, Canada
7. Groupe CSA, CSA N286, *Exigences relatives au système de gestion des installations nucléaires*
8. CCSN. REGDOC-2.3.1, *Réalisation des activités autorisées : Programmes de construction et de mise en service*, Ottawa, Canada
9. CCSN. REGDOC-2.5.2, *Conception d'installations dotées de réacteurs : Centrales nucléaires*, Ottawa, Canada
10. Groupe CSA, CSA N286.10, *Gestion de la configuration des installations de réacteurs à haute puissance*
11. CCSN. REGDOC-2.1.2, *Culture de sûreté*, Ottawa, Canada
12. Organisation internationale de normalisation (ISO), ISO 22301, *Societal security – Business continuity management systems – Requirements*, Genève, Switzerland
13. CCSN. REGDOC-2.2.2, *La formation du personnel*, Ottawa, Canada
14. CCSN. REGDOC-2.2.3, *Accréditation du personnel, tome III : Accréditation des personnes qui travaillent dans des centrales nucléaires*, Ottawa, Canada
15. CCSN. REGDOC-2.2.5, *Effectif minimal*, Ottawa, Canada
16. CCSN. REGDOC-2.2.4, *Aptitude au travail : Gérer la fatigue des travailleurs*, Ottawa, Canada
17. CCSN. REGDOC-2.2.4, *Aptitude au travail, tome II : Gérer la consommation d'alcool et de drogues*, Ottawa, Canada
18. CCSN. REGDOC-2.2.4, *Aptitude au travail, tome III: Aptitudes psychologiques, médicales et physiques des agents de sécurité nucléaire*, Ottawa, Canada
19. CCSN. REGDOC-2.12.1, *Sites à sécurité élevée, tome I: Force d'intervention pour la sécurité nucléaire* (document confidentiel), Ottawa, Canada

20. Groupe CSA, CSA A23.1:19/CSA A23.2:19, *Concrete materials and methods of concrete construction / Test methods and standard practices for concrete*
21. CCSN. REGDOC-2.5.1, *Considérations générales liées à la conception*, Ottawa, Canada
22. CCSN. REGDOC-3.1.1, *Rapports à soumettre par les exploitants de centrales nucléaires*, Ottawa, Canada
23. CCSN. REGDOC-2.3.2, *Gestion des accidents*, Ottawa, Canada
24. CCSN. REGDOC-2.4.1, *Analyse déterministe de la sûreté*, Ottawa, Canada
25. CCSN. REGDOC-2.4.2, *Études probabilistes de sûreté (EPS) pour les centrales nucléaires*, Ottawa, Canada
26. CCSN. REGDOC-1.1.1, *Évaluation et préparation de l'emplacement des nouvelles installations dotées de réacteurs*, Ottawa, Canada
27. CCSN. REGDOC-2.6.1, *Programmes de fiabilité pour les centrales nucléaires*, Ottawa, Canada
28. Groupe CSA, CSA N290.12-14, *Facteurs humains dans la conception des centrales nucléaires*
29. CCSN. REGDOC-2.4.3, *Sûreté criticité nucléaire*, Ottawa, Canada
30. CCSN. GD-52, *Guide de conception des laboratoires de substances nucléaires et des salles de médecine nucléaires*, Ottawa, Canada
31. CCSN. REGDOC-2.6.2, *Programmes d'entretien des centrales nucléaires*, Ottawa, Canada
32. CCSN. REGDOC-2.6.3, *Gestion du vieillissement*, Ottawa, Canada
33. CCSN. REGDOC-2.7.1, *Radioprotection*, Ottawa, Canada
34. CCSN. REGDOC-2.8.1, *Santé et sécurité classiques*, Ottawa, Canada
35. CCSN. REGDOC-2.9.1, *Protection de l'environnement : Principes, évaluations environnementales et mesures de protection de l'environnement*, Ottawa, Canada
36. Groupe CSA, CSA N288.5, *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills*
37. Groupe CSA, CSA N288.1, *Guide de calcul des limites opérationnelles dérivées de matières radioactives dans les effluents gazeux et liquides durant l'exploitation normale des installations nucléaires*
38. Groupe CSA, CSA N288.8, *Établissement et mise en oeuvre de seuils d'intervention pour les rejets dans l'environnement par les installations nucléaires*
39. Groupe CSA, CAN/CSA-ISO 14001, *Systèmes de management environnemental – Exigences et lignes directrices pour son utilisation*
40. CCSN. REGDOC-2.10.1, *Préparation et intervention relatives aux urgences nucléaires*, Ottawa, Canada
41. CCSN. REGDOC-2.11, *Cadre canadien pour la gestion des déchets radioactifs et les plans de déclassement*, Ottawa, Canada

42. CCSN. REGDOC-2.11.1, *Gestion des déchets, tome I : Gestion des déchets radioactifs*, Ottawa, Canada

43. CCSN. REGDOC-2.11.2, *Déclassement*, Ottawa, Canada

44. CCSN. REGDOC-3.3.1, *Garanties financières pour le déclassement des installations nucléaires et la cessation des activités autorisées*, Ottawa, Canada

45. CCSN. REGDOC-2.12.1, *Sites à sécurité élevée, tome II : Critères portant sur les systèmes et les dispositifs de protection physique* (document confidentiel), Ottawa, Canada

46. CCSN. REGDOC-2.12.2, *Cote de sécurité donnant accès aux sites*, Ottawa, Canada

47. CCSN. *Document d’orientation sur les dépôts confidentiels*, Ottawa, Canada

48. Agence internationale de l’énergie atomique (AIEA), *Treaty on the Non-Proliferation of Nuclear Weapons* (INFCIRC/140), Vienne, Autriche

49. IAEA. INFCIRC/164, *Accord entre le gouvernement du Canada et l’Agence internationale de l’énergie atomique relatif à l’application de garanties dans le cadre du Traité sur la non-prolifération des armes nucléaires*, 1972.

50. AIEA. *Protocole additionnel à l’Accord entre le Canada et l’Agence internationale de l’énergie atomique relatif à l’application de garanties dans le cadre du Traité sur la non-prolifération des armes nucléaires*, AIEA INFCIRC/164/Add 1, 2000.

51. CCSN. REGDOC-2.13.1, *Garanties et comptabilité des matières nucléaires*, Ottawa, Canada

52. CCSN. REGDOC-2.13.2, *Importation et Exportation*, Ottawa, Canada

53. CCSN. REGDOC-3.2.1, *L’information et la divulgation publiques*, Ottawa, Canada

54. CCSN. REGDOC-3.2.2, *Mobilisation des Autochtones*, Ottawa, Canada

55. IAEA, Safety Guide No. GS-G-3.5, *The Management System for Nuclear Installations*, Vienne, Autriche

Séries de documents d’application de la réglementation de la CCSN

Les installations et activités du secteur nucléaire du Canada sont réglementées par la CCSN. En plus de la *Loi sur la sûreté et la réglementation nucléaires* et de ses règlements d’application, il pourrait y avoir des exigences en matière de conformité à d’autres outils de réglementation, comme les documents d’application de la réglementation ou les normes.

Les documents d’application de la réglementation préparés par la CCSN sont classés en fonction des catégories et des séries suivantes :

1.0 Installations et activités réglementées

Séries
- 1.1 Installations dotées de réacteurs
- 1.2 Installations de catégorie IB
- 1.3 Mines et usines de concentration d’uranium
- 1.4 Installations de catégorie II
- 1.5 Homologation d’équipement réglementé
- 1.6 Substances nucléaires et appareils à rayonnement

2.0 Domaines de sûreté et de réglementation

Séries
- 2.1 Système de gestion
- 2.2 Gestion de la performance humaine
- 2.3 Conduite de l’exploitation
- 2.4 Analyse de la sûreté
- 2.5 Conception matérielle
- 2.6 Aptitude fonctionnelle
- 2.7 Radioprotection
- 2.8 Santé et sécurité classiques
- 2.9 Protection de l’environnement
- 2.10 Gestion des urgences et protection-incendie
- 2.11 Gestion des déchets
- 2.12 Sécurité
- 2.13 Garanties et non-prolifération
- 2.14 Emballage et transport

3.0 Autres domaines de réglementation

Séries
- 3.1 Exigences relatives à la production de rapports
- 3.2 Mobilisation du public et des Autochtones
- 3.3 Garanties financières
- 3.4 Séances de la Commission
- 3.5 Processus et pratiques de la CCSN
- 3.6 Glossaire de termes de la CCSN

Remarque : Les séries de documents d’application de la réglementation pourraient être modifiées périodiquement par la CCSN. Chaque série susmentionnée peut comprendre plusieurs documents d’application de la réglementation. Pour obtenir la plus récente liste de documents d’application de la réglementation, veuillez consulter le site Web de la CCSN.

Consultation Report: REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility*, Version 2

Rapport de consultation: REGDOC-1.1.2, *Guide de présentation d'une demande de permis : Permis de construction d'une installation dotée de réacteurs*, version 2

Introduction

REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility*, Version 2 clarifies the requirements and provides guidance on submitting an application to the CNSC to obtain a licence to construct a reactor facility in Canada, and identifies the information that should be included in the application.

Consultation process

On October 2, 2020, a draft version of REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility*, Version 2 was issued for public consultation until January 13, 2021.

During the consultation period, the CNSC received 88 distinct comments from 5 respondents: Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power) and Ontario Power Generation (OPG).

Consultation submissions were posted for feedback on comments from January 14 to February 16, 2021. No additional feedback was received.

A workshop was held with the 5 commenters on November 22, 2021, to discuss the remaining requests to allow the CNSC and commenters to obtain additional clarity on the comments received during public consultation and the CNSC's draft responses. A revised draft of the REGDOC was provided to workshop participants in advance.

The outstanding subjects were systematically reviewed, as indicated in the detailed comment disposition table. Following the workshop, additional responses were provided

Introduction

Le document d'application de la réglementation REGDOC-1.1.2, *Guide de présentation d'une demande de permis : Permis de construction d'une installation dotée de réacteurs*, version 2 précise les exigences et fournit de l'orientation relatives à la présentation à la CCSN d'une demande de permis de construction d'une installation dotée de réacteurs au Canada et énumère l'information qui devrait figurer dans la demande.

Processus de consultation

Le projet de REGDOC-1.1.2, *Guide de présentation d'une demande de permis : Permis de construction d'une installation dotée de réacteurs*, version 2, était ouvert à la consultation du 2 octobre 2020 au 13 janvier 2021.

Pendant cette période de consultation, la CCSN a reçu 88 commentaires distincts provenant de 5 répondants : Bruce Power, les Laboratoires Nucléaires Canadiens (LNC), Global First Power, la Société d'énergie du Nouveau-Brunswick (Énergie NB) et Ontario Power Generation (OPG).

Les commentaires ont été affichés aux fins de rétroaction du 14 janvier au 16 février 2022. Aucune observation supplémentaire n'a été reçue.

La CCSN a tenu un atelier avec les 5 répondants le 22 novembre 2021 afin de discuter des demandes restantes et de permettre à la CCSN et aux répondants d'obtenir plus de précision sur les commentaires reçus pendant la consultation publique et sur les réponses provisoires de la CCSN. Une version révisée du projet de REGDOC a été distribuée à l'avance aux participants à l'atelier.

to the participants. Participants provided no further comments.

The comments received during public consultation were consolidated into themes. The summary consultation report provides a response to each major comment and theme.

The revised draft documents (English and French), the table of all comments received, and a summary consultation report are provided with this Commission Member Document package.

Les questions non résolues ont été systématiquement examinées, comme il est indiqué dans le tableau détaillé de réponses aux commentaires. À la suite de l'atelier, la CCSN a transmis des réponses supplémentaires aux participants. Les participants n'ont pas fourni d'autres commentaires.

Les commentaires reçus lors de la consultation publique ont été regroupés par thèmes. Le rapport de consultation sommaire présente une réponse à chaque commentaire important et thème principal.

Les projets de REGDOC révisés (anglais et français), le tableau de tous les commentaires reçus et un rapport de consultation sommaire sont fournis avec le présent dossier du document à l'intention des commissaires.

Key comments

The following summarizes the key comments received during the consultation period and provides the CNSC's responses:

Principaux commentaires

Les principaux commentaires reçus lors de la période de consultation sont résumés ci-après, accompagnés des réponses de la CCSN.

Comment 1:

One of the main themes raised by stakeholders concerned the perceived overlap between material in REGDOC-1.1.2 and REGDOC-1.1.3, *Licence Application Guide: Licence to Operate a Nuclear Power Plant*

Stakeholders expressed the concern that some requirements and guidance were duplicated from REGDOC-1.1.3, *Licence Application Guide: Licence to Operate a Nuclear Power Plant*. There was also uncertainty regarding whether the expectations were the same for both licensing phases, or what the differences might be.

Commentaire 1

L'un des principaux thèmes soulevés par les parties intéressées concerne le chevauchement perçu entre l'information contenue dans le REGDOC-1.1.2 et celle du REGDOC-1.1.3, *Guide de présentation d'une demande de permis : Permis d'exploitation d'une centrale nucléaire*.

Les parties intéressées se sont dites préoccupées par le fait que certaines exigences et orientations sont reprises du REGDOC-1.1.3, *Guide de présentation d'une demande de permis : Permis d'exploitation d'une centrale nucléaire*. Il y avait également une incertitude quant à savoir si les attentes étaient les mêmes pour les deux phases d'autorisation, ou s'il y avait des différences.

CNSC staff response:

CNSC staff revised the text to clarify the scope of construction activities throughout the document. Staff revised the material to be as clear as possible given the breadth of potential technologies.

The intent is that REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*, REGODC-1.1.2, Version 2, and REGDOC-1.1.3, *Licence Application Guide: Licence to Operate a Nuclear Power Plant* provide a coordinated set of related documents that enable applicants to build the safety case at each stage of the reactor facility's lifecycle.

These documents are intended to provide applicants with information that "flows" through the entire lifecycle of a reactor facility – from site evaluation through site preparation, construction, operation and eventually decommissioning.

Réponse du personnel de la CCSN

Le personnel de la CCSN a révisé le texte pour clarifier la portée des activités de construction dans l'ensemble du document. Il l'a également révisé pour qu'il soit aussi clair que possible compte tenu de l'étendue des technologies potentielles.

L'intention est que les documents REGDOC-1.1.1, *Évaluation et préparation de l'emplacement des nouvelles installations dotées de réacteurs*, REGODC-1.1.2, version 2, et REGDOC-1.1.3, *Guide de présentation d'une demande de permis : Permis d'exploitation d'une centrale nucléaire* fournissent un ensemble coordonné de documents reliés qui permettent aux demandeurs d'élaborer le dossier de sûreté à chaque étape du cycle de vie de l'installation dotée de réacteurs.

Ces documents visent à fournir aux demandeurs des renseignements qui « circulent » à travers l'ensemble du cycle de vie d'une installation dotée de réacteurs – de l'évaluation et de la préparation de l'emplacement, à la construction, l'exploitation et finalement le déclassement.

Comment 2:

Stakeholders also had concerns with the application of a risk-informed graded approach to innovation.

Stakeholders claimed that a number of small modular reactor (SMR) designs have reduced risk profiles due to enhanced safety features, and this justifies a unique or simplified approach within the regulatory framework.

Commentaire 2

Les parties intéressées ont également exprimé des inquiétudes quant à l'application d'une approche graduelle qui tient compte du risque relativement à l'innovation.

Les parties intéressées ont affirmé qu'un certain nombre de conceptions de petits réacteurs modulaires (PRM) présentent des profils de risque réduits en raison de caractéristiques de sûreté renforcées, ce qui justifie une approche unique ou simplifiée dans le cadre de réglementation.

CNSC staff response:

The document has been revised for clarity, and more information added on the risk-informed, graded approach.

Given the wide range of reactor technologies under consideration by various parties, it is

Réponse du personnel de la CCSN

Le document a été révisé pour plus de clarté, et des informations supplémentaires ont été ajoutées sur l'approche graduelle tenant compte du risque.

worth noting that these facilities have risk profiles that vary significantly, depending on the characteristics of the activity or facility. The regulations allow flexibility in how applicants meet requirements. The approach articulated in the regulatory framework allows applicants to propose alternative approaches, based on a risk-informed graded approach, as long as the applicant provides adequate justification and demonstrates how safety will be maintained for persons and the environment.

Étant donné le large éventail de technologies de réacteurs envisagées par diverses parties, il convient de noter que ces installations ont des profils de risque qui varient considérablement, selon les caractéristiques de l’activité ou de l’installation. La réglementation permet une certaine souplesse dans la façon dont les demandeurs satisfont aux exigences. La démarche énoncée dans le cadre de réglementation permet aux demandeurs de proposer des solutions de rechange fondées sur une approche tenant compte du risque, dans la mesure où le demandeur fournit une justification adéquate et démontre comment la sûreté sera maintenue pour les personnes et l’environnement.

Comment 3:

Concerns were also raised with respect to the regulatory basis for requirements on specific items.

Stakeholders expressed concern that the draft REGDOC mixes statutory requirements directly derived from the *Nuclear Safety and Control Act* with more general “expectations”. They asked that a number of “shall” statements be changed to “should”.

Commentaire 3

Des préoccupations ont été soulevées concernant le fondement réglementaire des exigences visant des points particuliers.

Les parties intéressées ont exprimé des inquiétudes concernant le fait que le projet de REGDOC combine des exigences réglementaires directement issues de la *Loi sur la sûreté et la réglementation nucléaires* à des « attentes » plus générales. Elles ont demandé qu’un certain nombre d’énoncés « doivent » soient remplacés par « devraient ».

CNSC staff response:

In alignment with the work conducted to address comment 1, CNSC staff reviewed the document to ensure that the requirements and guidance were appropriate for a licence to construct application.

Every “shall” statement within this regulatory document is linked to a regulatory requirement or an expectation that would be included within the licensing basis for the facility.

Réponse du personnel de la CCSN

Conformément au travail effectué pour répondre au commentaire 1, le personnel de la CCSN a examiné le document pour s’assurer que les exigences et les orientations sont appropriées pour une demande de permis de construction.

Chaque énoncé « doit » dans ce REGDOC est lié à une exigence réglementaire ou à une attente qui serait incluse dans le fondement d’autorisation de l’installation.

Comment 4:

Stakeholders expressed concern that the level of detail required by the REGDOC is excessive, and that the detailed information

Commentaire 4

Les parties intéressées craignent que le niveau de détail exigé par le REGDOC soit excessif, et que les informations détaillées requises ne required may not be available at the time of making the licence application.

CNSC staff response:

The licence application process is integrated and progressive for all aspects of designing, constructing and operating a reactor facility, where:

- the applicant must plan for each Safety and Control Area at every lifecycle stage of the reactor facility, and
- the plan becomes more detailed and thorough as the facility progresses through design, construction and operation.

Applicants can use a risk-informed graded approach, based on the design of the reactor, and on the specific lifecycle phase that is being applied for. Where there are design uncertainties, conservative engineering judgement is expected.

The level of detail required for a specific licence to construct application is expected to be project-specific and based on the activities covered under the licence application.

soient pas toujours disponibles au moment de la demande de permis.

Réponse du personnel de la CCSN

Le processus de demande de permis est intégré et progressif pour tous les aspects de la conception, de la construction et de l’exploitation d’une installation dotée de réacteurs, où :

- le demandeur doit planifier chaque domaine de sûreté et de réglementation à chaque étape du cycle de vie de l’installation dotée de réacteurs, et
- le plan devient plus détaillé et plus complet à mesure que l’installation progresse dans sa conception, sa construction et son exploitation.

Les demandeurs peuvent utiliser une approche graduelle tenant compte du risque, basée sur la conception du réacteur et sur la phase du cycle de vie faisant l’objet de la demande. En cas d’incertitude au niveau de la conception, un jugement technique prudent est attendu.

Le degré de détail requis pour une demande de permis de construction particulière doit être propre au projet et reposer sur les activités visées dans la demande de permis.

Comment 5:

Stakeholders expressed concern regarding the requirements and guidance in the management system section, with particular emphasis on the “intelligent customer” concept.

The use of ‘supervising people’ within the definition was noted as being out-of-step with CSA N286-12, *Management system requirements for nuclear facilities,* which uses ‘overseeing’ instead.

Commentaire 5

Les parties intéressées ont exprimé des préoccupations concernant les exigences et l’orientation de la section sur le système de gestion, et plus particulièrement à l’égard du concept de « client intelligent ».

L’utilisation de l’expression « supervising people » dans la définition anglaise a été jugée incompatible avec la norme CSA N286-12, *Exigences relatives aux systèmes de gestion des installations nucléaires,* qui utilise plutôt l’expression « overseeing ».

CNSC staff response:

The text was revised for clarity, and to better capture the intent. ‘informed customer’ was used in place of ‘intelligent customer’. The

Réponse du personnel de la CCSN

Le texte a été révisé pour plus de clarté et pour mieux saisir l’intention. L’expression « client informé » a remplacé « client

glossary's definition of informed customer was updated to use 'oversee' instead of 'supervise'.	intelligent ». La définition de client informé dans le glossaire a été mise à jour et utilise le terme « oversee » au lieu de « supervise ».
CNSC staff believe the information within this draft REGDOC is aligned with CSA N286, and sees no conflict between these two documents. CNSC staff are aware that applicants require flexibility in organizing their management system, and believe the current text indicates what needs to be provided while maintaining flexibility.	Le personnel de la CCSN estime que l'information contenue dans ce projet de REGDOC est conforme à la norme CSA N286 et ne voit aucun conflit entre ces deux documents. Le personnel de la CCSN comprend que les demandeurs ont besoin de souplesse dans l'organisation de leur système de gestion et estime que le texte actuel indique ce qui doit être fourni tout en maintenant cette souplesse.
Comment 6:	**Commentaire 6**
The stakeholders were concerned that the REGDOC did not appear to support staged submissions for an application for a licence to construct, such as the ability to submit a 'partial' licence application as outlined in REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*.	Les parties intéressées étaient préoccupées par le fait que le REGDOC ne semblait pas soutenir la présentation progressive d'une demande de permis de construction, comme la possibilité de soumettre une demande de permis « partielle », tel qu'il est décrit dans le REGDOC-1.1.1, *Évaluation et préparation de l'emplacement des nouvelles installations dotées de réacteurs*.
CNSC staff response:	**Réponse du personnel de la CCSN**
Staff revised the draft REGDOC to clarify the intent regarding submission of information supporting an application for a licence to construct. A new sub-section was added that outlines the expectations regarding submission of licence application documentation over a defined period of time.	Le personnel a révisé le projet de REGDOC afin de clarifier l'intention concernant la soumission de renseignements à l'appui d'une demande de permis de construction. Une nouvelle sous-section a été ajoutée qui décrit les attentes concernant la présentation de la documentation relative à la demande de permis selon une période définie.
Comment 7:	**Commentaire 7**
Stakeholders requested additional clarity around the provision of supplemental guidance early in the licensing process.	Les parties intéressées ont demandé plus de clarté concernant la fourniture d'orientation supplémentaire au début du processus d'autorisation.
CNSC staff response:	**Réponse du personnel de la CCSN**
Staff revised the draft REGDOC to clarify that the starting point of the licensing process is upon receipt of an application to the Commission Registry. However, applicants are strongly encouraged to be proactive in their communications, and to engage with	Le personnel a révisé le projet de REGDOC pour préciser que le point de départ du processus d'autorisation est la réception d'une demande au Greffe de la Commission. Toutefois, les demandeurs sont fortement encouragés à être proactifs dans leurs

CNSC staff as early as possible in the applicant's development of their licence application.

Within the supplemental guidance, CNSC staff will confirm with the applicant the appropriate versions of each document (regulatory document, code or standard) to be cited. Early engagement allows staff to provide this information as early as possible.

communications et à mobiliser le personnel de la CCSN le plus tôt possible dans l'élaboration de leur demande de permis.

Dans le cadre de cette orientation supplémentaire, le personnel de la CCSN confirmera avec le demandeur les versions appropriées de chaque document (document d'application de la réglementation, code ou norme) à citer en référence. Une mobilisation précoce permet au personnel de fournir cette information le plus tôt possible.

Concluding remarks

This project has undergone extensive stakeholder consultations. CNSC staff have listened to concerns and the document has been modified, as appropriate.

Mot de la fin

Ce projet a fait l'objet de vastes consultations auprès des parties intéressées. Le personnel de la CCSN a entendu les préoccupations et a modifié le document, au besoin.

Public Consultation / Consultation publique
Draft REGDOC-1.1.2, Licence Application Guide: Licence to Construct a Reactor Facility, Version 2
REGDOC-1-1-2, Guide de présentation d’une demande de permis : Construction d'une installation dotée de réacteurs, version 2

Comments: October 2020 to January 13, 2021; **Feedback on comments:** January 14 to February 16, 2021; **Feedback on responses to comments:** received November 10, 2021

The CNSC received 85 distinct comments from 5 stakeholders. Some of the comments have been consolidated into “themes”. All individual comments are included in their entirety in the various tables below. The CNSC also received “feedback on responses to comments” and provided further responses; this information has been added to the specific comments in table B.

Commentaires : Octobre 2020 au 13 janvier 2021 ; Feedback sur les commentaires : 14 janvier au 16 février 2021 ; **commentaires sur les réponses aux commentaires :** reçus le 10 novembre 2021.

La CCSN a reçu 85 commentaires distincts de 5 répondants. Certains de ces commentaires ont été regroupés en "thèmes". Tous les commentaires individuels sont inclus dans leur intégralité dans les différents tableaux ci-dessous. La CCSN a également reçu des "commentaires sur les réponses aux commentaires" et a fourni des réponses supplémentaires ; ces informations ont été ajoutées aux commentaires spécifiques du tableau B.

Table A: Comments on Request for Information

	Reviewer	Section or Para.	Reviewer’s Comment and Proposed Change	Response
•	No comments specific to the Request for Information were received.			

Table B: Comments on draft REGDOC-1.1.2, Licence Application Guide: Licence to Construct a Reactor Facility, Version 2

	Reviewer	Section or Para.	Reviewer’s Comment and Proposed Change	Response
1.	Request extracted from an individual comment (all comments are shown in their entirety in the tables below).		Given the importance of an application guide for all reactor types, licensees strongly urge the CNSC to conduct a workshop with all interested stakeholders to better understand applicants’ needs and align this early draft with information in REGDOC-1.1.5., Supplemental Information for Small Modular Reactor Proponents.	No change to the document. The CNSC organized and hosted a workshop for all stakeholders who commented at public consultation; the workshop was held on November 22, 2021.
2.	Comments extracted from other individual comments.		Large portions of many SCA sections or even entire sections of this draft REGDOC-1.1.2 (Licence to Construct, LTC) are identical with the corresponding sections of REGDOC-1.1.3 (Licence to Operate, LTO), even if some qualifiers are included in the introductory portion of the sections specifying that the application	Text has been revised to clarify scope of construction activities throughout the document. The CNSC's intent is that REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*, REGDOC-1.1.2 Version 2, and REGDOC-1.1.3, *Licence Application Guide: Licence to Operate a Nuclear Power Plant* provide a harmonious set of related documents that enable

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			is for construction activities including fuel-out commissioning. [Certain sections are] identical with the corresponding section from REGDOC-1.1.3. Therefore, it is not clear if the CNSC's expectations are identical for the two licence applications or, if different, what the differences would be. Clarification is needed on whether the scope would be limited for this phase and to extract the rest of the requirements from the current text.	applicants to build the reference safety case at each stage of the reactor facility's lifecycle. Draft REGDOC-1.1.2, Version 2 builds on Version 1 and on the information in REGDOC-1.1.3, with a focus on the construction stage of the reactor facility's lifecycle. This set of documents is intended to provide applicants with information that "flows" through the entire lifecycle of a reactor facility -- from site evaluation through site preparation, construction, operation, and eventually decommissioning. There are technical aspects of operation that the applicant should consider in the construction phase., The CNSC accepts alternative approaches to the application of regulatory documents, based on the CNSC's risk-informed graded approach, for both the design of the reactor (NPPs compared to SMRs and novel technologies) and also for the specific lifecycle phase for which a licence is being requested. However, the CNSC expects that all safety aspects will be considered at each lifecycle stage with respect to the long-term management of the reactor facility.
			Feedback on CNSC Response: Industry seeks further discussion on this point as a workshop item and requests the revised text be shared ahead of time so participants can offer CNSC staff a more fulsome, contextual review based on the actual changes The CNSC's disposition does provide a rational narrative as to the thinking behind the structure of REGDOCs 1.1.1, 1.1.2 and 1.1.3. Licensees understand the approach, appreciate the references to "graded approach" and "alternatives" and ultimately believe it can work with an effective roll-out to CNSC specialists. However, while the approach seems to allow flexibility, it also leaves the sufficiency of a licence application open to interpretation. Concerns exist whenever there is ambiguity and words are open to the interpretation of staff who may not have been involved in the writing of the REGDOC and aware of the author's intent. In its previous submissions, licensees provided specific examples	Additional Response: Text was revised to clarify options for submitting information supporting an application for a licence to construct. At the workshop, participants recommended clarifying the wording regarding the intent of staged submissions and use of hold points. Staff reviewed the draft text and revised material to focus on construction. The material is as clear as possible given the breadth of potential technologies. Readiness for submission of a licence application falls upon the applicant.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			where direct copying of REGDOC 1.1.3 requirements into REGDOC 1.1.2 could be problematic since they are expecting a level of readiness which is unrealistic at the time of an LTC application. Without details on the specifics as to how these concerns have been addressed, it is difficult for industry to determine whether specific concerns have been resolved. This leads to continuing ambiguity during the submission of an LTC application, which introduces project risk and uncertainty.	
Theme: Risk-informed graded approach / innovation. See Table C, below, for all comments that have been consolidated into this theme.				
3.	Consolidated theme from individual comments (which are shown in their entirety in Table C, below).		As Canada looks to emerging technologies, such as Small Modular Reactors (SMR), to meet its future energy and environmental challenges, there is a pressing need for a contextual, up-to-date licence application guide to construct reactor facilities of all types. As currently written, this draft REGDOC does not meet that need. Many SMR designs have enhanced safety features in addition to those of traditional reactor designs. Consequently, their risk profile is even further reduced. Regulatory requirements stipulated for such advanced reactor designs need to take these enhancements into consideration. Unless that difference is reflected in an application guide, Canada's ability to encourage new reactor proponents and attract necessary financial investment will be inappropriately impacted. Unlike other recently-issued REGDOCs, the use of a "risk-informed graded approach" is barely mentioned in this draft. Though referenced in REGDOC-1.1.5, the concept of a risk-informed graded approach is particularly important for emerging technologies such as SMRs and should be more explicitly stated at the beginning of this REGDOC. The regulatory framework should not restrict innovation.	The document has been revised for clarity, to add more information on a risk-informed graded approach. Given the wide range of reactor facilities – especially of advanced and small modular reactors (SMRs) – and given that nuclear facilities have risk profiles that vary significantly, depending on the particular characteristics of the activity or facility, the CNSC allows – and even expects – applicants to propose alternative approaches to the application of the regulatory framework, based on the CNSC's risk-informed graded approach, if the applicant provides adequate justification. For additional information on the use of this approach: - Most regulatory documents, including REGDOC-1.1.2 Version 2, include the following statement: For information on the implementation of regulatory documents and on the graded approach, see REGDOC-3.5.3, *Regulatory Fundamentals*. - REGDOC-3.5.3, *Regulatory Fundamentals*, provides an explanation of the graded approach. At the request of stakeholders, REGDOC-3.5.3 is in the process of being revised to add more explanation and guidance of how applicants may propose an alternative approach to the application of this regulatory document, based on the CNSC's risk-informed graded approach.. - The CNSC also expects proponents and applicants for advanced reactors and SMRs to use the information provided in REGDOC-1.1.5, *Supplemental Information for Small Modular Reactor Proponents*, in preparing licence applications for any lifecycle phases. - Vendors may request a pre-licensing vendor design review (VDR), an optional service provided by the CNSC, that enables CNSC staff to provide feedback early in the design process based on a vendor's reactor technology

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Specifically, innovative new nuclear technologies may not meet the prescriptive requirements in the REGDOC framework An inability to apply concepts/requirements outlined in this REGDOC in a risk informed graded approach will likely preclude small/micro SMRs from being deployed by proponents other than existing large nuclear utilities. This will, in effect, stop any potential SMR deployment, particularly at the smaller end of the spectrum and put Canada's ability to capitalize on first-mover advantage at risk as outlined in the SMR Roadmap. In an extreme example, if the licence application guide indicates that the application "shall" comply with a specific REGDOC, but the applicant proposes to use new technology that cannot meet all the requirements of that REGDOC, then an applicant may make a business decision not to proceed with the entire project.	Every "shall" statement in this regulatory document is linked to a regulatory requirement or an expectation that would be included within the licensing basis for the facility. The same regulations allow flexibility in how a proponent, applicant or licensee meets the requirement. If the applicant is proposing a novel or innovative technology where the requirement does not apply, the applicant has the option of providing a justification of why this requirement does not apply and of how the novel or innovative technology remains safe for persons and the environment. The CNSC will accept a justified explanation; however, the applicant must address the fact that the requirement does not apply to their novel or innovative technology and why the novel or innovative technology remains safe. For additional information, see section 11 of REGDOC-2.5.2, *Design of Reactor Facilities*, and section 5.4 and appendix C (under development) of REGDOC-3.5.3, *Regulatory Fundamentals*. The text "to the extent practicable" has been added where applicable in REGDOC-1.1.2 to clarify that the application should address this information in that manner.
			Feedback on CNSC Response: Industry seeks further discussion on this point as a workshop item and requests the revised text be shared ahead of time so participants can offer CNSC staff a more fulsome, contextual review based on the actual changes Regarding the Section 2.1 statement, "Under the Nuclear Safety and Control Act (NSCA), the CNSC does not certify a reactor design," there needs to be further clarification on the degree to which licensees can propose alternative approaches to the application of the regulatory framework, such as design certification. This statement is inconsistent with recent CNSC commitments to the adoption of an agile and/or flexible approach to the application of the current regulatory framework to SMR licence applications. Note that in a recent white paper (see https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML21235A418) entitled - Micro-reactors Licensing	Additional Response: Text regarding licence renewals and amendments was deemed out-of-scope and removed. Consideration of reactor certification is out-of-scope for this document.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Strategies – it was acknowledged that US NRC staff "is considering strategies to streamline the license review process by maximizing standardization and finality through the use of design certification, standard design approval, and topical report approvals." For the purposes of the white paper, the term "standardization refers to a micro-reactor design that could be deployed to the majority of sites in the U.S. without the need for site-specific features where the majority of safety issues could be resolved as part of a design certification and/or manufacturing license."	
Theme: What is the regulatory basis for the CNSC's requirements on specific items? Note that some of the information shown in this theme has been extracted from a number of similar comments, to summarize the issue and provide one answer for multiple almost-identical comments. See table D, below, for all comments relating to the theme requesting information about the regulatory basis for "shall" and "should" statements.				
4.	Consolidated theme from individual comments (which are shown in their entirety in Table D, below).		The draft REGDOC mixes requirements ("shall" statements) that have a basis under the NSCA with expectations ("should" statements) that have no basis under the NSCA. For example, the draft REGDOC states "the applicant shall describe how their proposed public information and disclosure program… meets the requirements in REGDOC-3.2.1." While submission of a proposed public information and disclosure program is indeed a statutory requirement (a "shall" statement is appropriate), the requirement to meet REGDOC-3.2.1 is not a statutory requirement. In other words, this sentence has mixed statutory requirements with general expectations. Accordingly, all statements that mix requirements ("shall") with expectations ("should") must be rewritten to clearly delineate requirements from expectations. The intent of this comment is to note that the REGDOC cannot and should not create [additional] requirements […], beyond any requirement specified in the NSCA. Accordingly, this statement must be revised to reflect guidance, not requirement. Suggested Change: Review and revise the REGDOC to eliminate "shall" statements	Text has been reviewed, and in some cases revised (where appropriate for a construction licence) from "shall" to "should". Every "shall" statement in this regulatory document is linked to a regulatory requirement or to something that will be included in the licensing basis for the facility (for example, REGDOC-3.2.1 will be part of the licensing basis for every reactor facility). This regulatory document includes select requirements that are based on the NSCA and the regulations made under the NSCA. Other requirements are related to documents that clarify requirements that must be addressed and will be incorporated into the licensing basis. As stated in section 2: "The licence application, and the documents needed to support it form the reference safety case for the reactor facility, and thus would form part of the licensing basis. Hence, applicants should be aware that this information needs to be controlled in the same manner as other parts of the licensing basis and could be subject to CNSC compliance verification." Hence, applicants are required to reference documents (for example, REGDOC-3.2.1) in their licence application that will be required as part of the licensing basis when a licence to construct is issued by the Commission. If a reference to a required regulatory document (for example, REGDOC-3.2.1) is not included in the licence application, the staff may not recommend that the Commission issue the licence.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			that are not fully aligned with the statutory requirements under the NSCA. Where those statements go beyond the requirements of the NSCA, they should be rewritten as guidance, not requirements. Specific examples of these statements are identified in [other comments]. MAJOR Impact on Industry: In order for the overall regulatory framework to not unduly burden business decisions, it is absolutely critical to clearly distinguish statutory requirements ("shall" statements) from general expectations ("should" statements).	See Table D, below, for individual responses to comments about specific "shall" statements in the draft regulatory document.
			<u>Feedback on CNSC Response:</u> Industry seeks further discussion on this point as a workshop item and requests the revised text be shared ahead of time so participants can offer CNSC staff a more fulsome, contextual review based on the actual changes. Section 2 of the REGDOC says the application and the documents needed to support it become the <u>reference safety case</u> of the reactor facility and form part of the <u>licensing basis</u> at the construction licence stage. The information provided with the licence application, include the documents to which the application makes reference, constitutes the <u>construction safety case</u>. Getting guidance on the extent of this would be beneficial; especially what is considered licensing basis.	<u>Additional Response:</u> No change to the document. A discussion was held to address participants' concerns with regards to level of detail required to submit a licence to construct.
Theme: Requirements and guidance for construction licenses Note that some of the information shown in this theme has been extracted from a number of similar comments, to summarize the issue and provide one answer for multiple almost-identical comments. See table E, below, for all comments relating to the theme of "requirements and guidance for construction licenses.				
5.	Consolidated theme from individual comments (which are shown in their entirety in Table E,		Licensees believe [some of the information in this draft] is not appropriate guidance at [the construction] phase of a potential project.	Text has been revised for clarity throughout the document to address the final point of this comment (about the applicant having to interpret, which may lead to unnecessary and inefficient iterations between the applicant and the CNSC). Also, the following text has been added where applicable in

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
	below).		It is important to maintain a clear distinction between requirements and guidance in all aspects of the regulatory framework. […] this draft does not seem to recognize these are construction projects not ongoing operations. The level of detail expected in this section is unrealistic at time of licence to construct application. …It is unlikely the requested detail will be finalized at the time of a licence to construct application. This is overly broad at this phase of a potential project. A proponent's inability to provide requested detail at the time of a licence to construct application will delay licensing timelines and cause undue delays to projects. Licensees believe [certain sections] do not belong in a licence to construct. These are more appropriate during licence renewals, or licences to operate. The REGDOC is asking for information that would not exist for first constructors. First-time constructors cannot be required to submit information that will not exist. Without [the requested] guidance and clarification, it is left to the applicant to interpret, which most likely would lead to unnecessary and inefficient iterations between the applicant and the CNSC. See also further detailed and specific comments on this aspect [see Table E for all individual comments related to this theme].	REGDOC-1.1.2 to clarify that the application should address the information in the sections "to the extent practicable". The series of related regulatory documents (REGDOC-1.1.1, REGDOC-1.1.2 V2, REGDOC-1.1.3, REGDOC-1.1.5, and eventually REGDOC-1.1.4 (which is under development)) provides a structure for the applicant to consider a cohesive, integrated plan that becomes more detailed and less preliminary as the reactor project moves through the lifecycle phases. The CNSC is providing this information as guidance (with "shall" statements identifying certain regulatory requirements) and is providing the harmonious set of related REGDOCs as a service. The CNSC accepts a graded approach, based on both the design of the reactor (NPPs compared to SMRs and novel technologies) and also on the specific lifecycle phase that is being applied for. An application for a licence to construct covers a broad range of activities ranging from pouring concrete, through installing systems, and to testing and commissioning those systems. It is entirely reasonable for the applicant to have requirements for management systems, training, physical design, and other SCAs at this stage; the applicant should have some concrete details at the time of an application for a licence to construct. Some of the details may not be available at the time of application for a licence to construct (the plan may not be 100% complete), but additional details can be added as part of the application for a licence to operate.
			Feedback on CNSC Response: Industry seeks further discussion on this point as a workshop item and requests the revised text be shared ahead of time so participants can offer CNSC staff a more fulsome, contextual review based on the actual changes	Additional Response: No change to the document. The discussion regarding comments 2-4 were deemed to have addressed this comment.

	Reviewer	Section or Para.	Reviewer’s Comment and Proposed Change	Response
			This remains a significant area of concern that does not appear to have been fully addressed in the CNSC’s disposition table.	
Individual comments on specific sections of the draft regulatory document				
6.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 1.5, CNSC contact information	The REGDOC says the “licensing process is initiated when the applicant submits a licence application” but also states that “early engagement with CNSC staff is encouraged.” It is not clear what is meant by early engagement. Specifically, are potential applicants encouraged to engage with CNSC staff prior to the submission of the application, or should potential applicants wait until the application is submitted and the licensing process is initiated? In fact, the statement is inconsistent with subsequent text. Section 2.5 states that the CNSC will provide the applicant with appropriate versions of relevant REGDOCs. This could only be done if the licensing process begins before submission of the application. Additionally, Section 4.13.1 notes that the applicant is encouraged to contact the CNSC “before” submission of the application. Finally, REGDOC-3.5.1 also recommends communication with the CNSC prior to submission of an application. This REGDOC should clearly recommend contacting the CNSC prior to submission of the application. For example, it may be helpful to recommend submission of a formal letter of intent to the Secretariat. This would also allow CNSC staff to plan their review activities. Suggested Change: Revise Section 1.5 to read, 'the applicant should contact the CNSC prior to formal submission of the application.' MAJOR Impact on Industry: "The clarification would likely benefit applicants as well as CNSC staff. Early engagement—meaning prior to submission of the application—will increase the likelihood of a successful	The text has been revised to incorporate the intent of the comment. “Early engagement” is not a mandatory step, but may help in clarifying any questions that applicants have about the requirements or the process. A recommended process for formally engaging with CNSC staff has been provided (for example, submitting a letter of intent to the CNSC Secretariat). This is now Section 1.4

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			application, and will allow the CNSC to manage and deploy resources appropriately. Additionally, it would give the CNSC an opportunity to provide expectations in advance of receipt of an application (for example, a more current and site-specific listing of "other matters of regulatory interest"). The clarification would also benefit new entrants to the industry (for example, companies that may wish to apply for a combined site preparation/construction licence and do not have contacts at the CNSC as per an existing site preparation licence).	

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
7.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 2.0, Licensing Basis, Process and Submission and 2.1, Background	As currently written: 1. The document does not clearly express that many aspects of the construction and the future operation of a reactor facility are dependent on the intended location and other external factors. 2. The passage, "Licenses can be combined to permit multiple activities. The applicant shall address all regulatory requirements pertaining to each stage of the reactor facility's lifecycle in the licence application" is unclear. Suggested Change: For clarity, the document should: 1. State if the application for a licence to construct must be preceded by or combined with any other licence applications, or if any endorsements by the Commission are required prior its submission (e.g., licence to prepare a site for new reactor facilities). 2. Clarify whether the 2nd paragraph means: a) requirements for all stages of the facility's lifecycle shall be addressed in this application, or b) Only the regulatory requirements for the lifecycle stages covered by the current licence being applied for need to addressed. MAJOR Impact on Industry: Clarity will allow for a more efficient licence application process and minimize financial burden for potential proponents.	Text has been revised for clarity. Applicants may apply for combined licences that permit multiple activities. If a licence to prepare a site has not previously been obtained, an applicant would be expected to address the requirements and consider the guidance in REGDOC-1.1.1 as part of a combined application for a licence to prepare site and to construct. Please note that other legislation, such as the *Impact Assessment Act*, may also apply. Text in Section 2.has been revised as follows: "The licence application, and the documents needed to support it form the reference safety case for the reactor facility and thus would form part of the licensing basis. Hence, applicants should be aware that this information needs to be controlled in the same manner as other parts of the licensing basis and could be subject to CNSC compliance verification. Further information on the licensing basis is provided in REGDOC-3.5.3, *Regulatory Fundamentals* [2]. The construction safety case includes requirements for preparing the site, designing and constructing the facility, and fuel-out commissioning. Applicants should consider that the safety case for the facility will need to be updated as part of an application for a licence to operate." The text below is now in Section 2.4 "**The applicant may apply for a combined** licence ~~can be combined to~~ **that** permit**s** multiple activities **(for example, a combined licence to prepare the site and to construct the reactor facility)**. The applicant **may propose any combination of activities and CNSC staff will review each combined licence application against the applicable regulatory requirements.** **The applicant** shall address all regulatory requirements pertaining to **all** stages **(e.g., construction, operation) covered by** ~~of the reactor facility's lifecycle in~~ the **combined** licence application. Applicants are strongly encouraged to discuss a combined licence application strategy with the CNSC prior to submitting an application."

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
8.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 2.3, Licensing process	The REGDOC says the "licensing process is initiated when the applicant submits a licence application" but also states that "early engagement with CNSC staff is encouraged." It is not clear what is meant by early engagement. Specifically, are potential applicants encouraged to engage with CNSC staff prior to the submission of the application, or should potential applicants wait until the application is submitted and the licensing process is initiated? In fact, the statement is inconsistent with subsequent text. Section 2.5 states that the CNSC will provide the applicant with appropriate versions of relevant REGDOCs. This could only be done if the licensing process begins before submission of the application. Additionally, Section 4.13.1 notes that the applicant is encouraged to contact the CNSC "before" submission of the application. Finally, REGDOC-3.5.1 also recommends communication with the CNSC prior to submission of an application. This REGDOC should clearly recommend contacting the CNSC prior to submission of the application. For example, it may be helpful to recommend submission of a formal letter of intent to the Secretariat. This would also allow CNSC staff to plan their review activities. Suggested Change: Revise section 2.3 to read. 'Engagement with CNSC staff prior to formal submission of the application is encouraged. If the applicant does not have an existing CNSC licence (and associated contact information), the applicant should submit a formal letter of intent submitted to the Secretariat in advance of preparation of the application.' MAJOR Impact on Industry: The clarification would likely benefit applicants as well as CNSC staff. Early engagement—meaning prior to submission of the application—will increase the likelihood of a successful application, and will allow the CNSC to manage and deploy resources appropriately.	The text has been revised to incorporate the intent of the comment. "Early engagement" is not a mandatory step, but may help in clarifying any questions that applicants have about the requirements or the process. A recommended process for formally engaging with CNSC staff has been provided (for example, submitting a letter of intent to the CNSC Secretariat). This text is now in Section 2.2 The CNSC recommends that applicants who are considering applying for a combined licence to prepare site and to construct strongly consider conducting a pre-licensing exercise with the CNSC as laid out in REGDOC-1.1.5, *Supplemental Information for Small Modular Reactor Proponents*. CNSC staff suggest that applicants consider requesting a vendor design review (VDR); information on this process has been added. Applicants who are considering applying for a new reactor facility licence should review the requirements of other legislation such as the *Impact Assessment Act*, which has information around early planning that may be applicable.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Additionally, it would give the CNSC an opportunity to provide expectations in advance of receipt of an application (for example, a more current and site-specific listing of "other matters of regulatory interest"). The clarification would also benefit new entrants to the industry (for example, companies that may wish to apply for a combined site preparation/construction licence and do not have contacts at the CNSC as per an existing site preparation licence).	
			<u>Feedback on CNSC Response:</u> Licensees request the revised text be shared ahead of the workshop to ensure the wording changes are clearly understood. There is no confirmation in the CNSC's disposition table that the change to section 2.3 has been made. The issue is not just applying for a combined licence, but the allowance and encouragement for pre-licensing engagement. What if the applicant is not the design vendor? In that case, can the design developer engage in a VDR and not the licence applicant?	<u>Additional Response:</u> Refer to the changes above Workshop participants expressed concern that the revised wording could prompt confusion as to who conducts a VDR with the CNSC. The text of section 2.3 was reviewed. In no instances was a Vendor Design Review referred to as something an applicant undertakes.
9.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 2.3, Licensing process and Section 2.5, Completing the license application	The REGDOC says the CNSC will provide the applicant with appropriate versions of relevant REGDOCs. This is inconsistent with the statement in Section 2.3 that states the licensing process begins with submission of the application. Additionally, this is inconsistent with the philosophy that the applicant is free to meet statutory requirements through alternative means, and REGDOCs are not statutory requirements unless and until they are cited by a licence under the NSCA. Also, licensees seek additional clarity on the passage in 2.5 which reads, "Early in the licensing process, the CNSC will provide the applicant with the appropriate version (publication date and revision	Text has been revised to clarify that the starting point of the licensing process is upon receipt of an application to the Commission Registry (as per the *Class I Nuclear Facility Regulations* and the *CNSC Rules of Procedure*). However, applicants are strongly encouraged to be proactive in their communications, and to engage with CNSC staff as early as possible in the applicant's development of their licence application (even though these steps are not considered to be licensing process steps). This text is now in section 2.2 Text has been revised to add a clear statement that the use of alternatives includes the use of codes and standards other than those referenced in this licence application guide, if the applicant submits a code comparison to the CNSC that demonstrates that the other codes and standards provide a level of safety that is at least equivalent to Canadian standards. This text is now in Section 2.2

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			number) of each document to be cited through supplemental Guidance." At what point in the process will this information be provided? Given the level of effort needed to carry out a compliance review and for licence application preparation, early access to this information is critical. Suggested Change: Clarify both Section 2.3 and Section 2.5 to note (a) the applicant may request guidance from the CNSC prior to submission of the application, (b) if requested, the CNSC may provide REGDOCs that would typically be expected to form part of the facility's licensing basis, and—critically—(c) the applicant is free to propose alternatives. Also, define the starting point of the licensing process. Clarity in process will minimize misalignment in expectations and compliance criteria. MAJOR Impact on Industry: It is important to clarify both the process and the philosophy. With respect to process, this REGDOC does not make clear that engagement with the CNSC prior to the application is a key element of the licensing process. An applicant who waits until submission of the application before engaging with the CNSC may place their overall project scope and schedule at risk. This identical comment was submitted for sections 2.3 and 2.5.	REGDOCs provide the CNSC's interpretation of statutory requirements. In general, applicants are free to propose alternative means of compliance with regulatory requirements—that is, other than that provided in REGDOCs—provided they can demonstrate equivalent levels of safety. However, if an applicant proposes an alternative, it is up to the applicant to demonstrate that the alternative is at least equivalent to the level of safety described in the CNSC's regulatory documents. Regulatory documents are not statutory requirements, but either the regulatory document or an equivalent code, standard or approach must be referenced in the licence application. Hence, applicants are required to reference documents (for example, REGDOC-3.2.1) in their licence application that will be required as part of the licensing basis when a licence to construct is approved by the Commission. For the question about providing the appropriate versions of regulatory documents: A proponent/applicant of a new facility must meet applicable regulatory requirements in force at the time of their application. The CNSC will confirm with the applicant the appropriate version of each document (regulatory document, code or standard) to be cited. If the applicant engages with the CNSC early, this information will be provided as early as possible. The text has been revised for clarity: "Applicants are encouraged to discuss with the CNSC the appropriate version (publication date and revision number) of each document (regulatory document, code or standard) that are planned to be applied. CNSC staff may also provide supplemental guidance on additional documents that the applicant should consider and address in the application. This pre-licensing communication is in alignment with REGDOC 3.5.1, *Licensing Process for Class I Nuclear Facilities and Uranium Mines and Mills* [3]." This text is now in Section 2.4
			Feedback on CNSC Response: Industry seeks further discussion on this point as a workshop item and request the revised text be shared ahead of time so participants can offer CNSC staff a more fulsome, contextual review based on the actual changes.	Additional Response: No change to the document. Workshop participants expressed concern with wording that says, "meeting requirements at time of licence application".

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			The CNSC's position is that it will not provide appropriate REGDOCs or their versions, but expects applicants to propose this information or what alternative codes and standards are being used, and to justify that they meet or exceed the requirements in the REGDOCs. Given the long timeline for review of an LTC application and the long public review process, this leaves the application adequacy subject to interpretation. Also, with regard to the applicant meeting applicable regulatory requirements at the time of application submission, if the statement in section 2.5 is referring to only regulations as regulatory requirements, it is fine. However, licensees feel the REGDOC should include language to establish a "freeze date" in advance of the application (not in force at the time of the application), so the applicant can work with a defined set of regulatory documents (REGDOCS/standards) in preparing the application. This "freeze date" is a familiar, established practice which is being used effectively for PSRs.	CNSC staff could not find any instances of this or similar wording within the document.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
10.	Global First Power	Section 2.3, Licensing process	'…the CNSC may request additional information by sending supplemental, facility-specific guidance to the applicant prior to the beginning of the licensing process.' Since the formal licensing process starts with the application, it is not clear under what process and on what basis this 'additional information' request and 'facility-specific guidance' will be developed and sent by the CNSC to the applicant. (Until an application is submitted, there is no applicant, only a proponent). Section 3.1, Para 1 of REGDOC-3.5.1 is very vague on this subject and does not provide any details of such process. The only other process that may be better described is in REGDOC-1.1.5, section 4.2.1. However, it is limited to SMRs with novel technologies preparing for Licence to Prepare Site applications. Moreover, that process seems to focus on application assessment strategies rather than on 'facility-specific guidance.' Suggested Change: CNSC to clarify the process by which 'the CNSC may request additional information by sending supplemental, facility-specific guidance to the applicant prior to the beginning of the licensing process.'	The intent of the comment has been incorporated through a number of changes to the text in sections 2.3 and 2.5, to clarify the text and to add details on pre-licensing communications with the CNSC. Also, the following text has been added to section 2.4: "This pre-licensing communication is in alignment with REGDOC-3.5.1, *Licensing Process for Class I Nuclear Facilities and Uranium Mines and Mills* [3]."
11.	Global First Power	Section 2.3, Licensing process	'Note: The information provided in this document does not prevent applicants from proposing alternatives ways to meet a requirement. However, any proposed alternative should appropriately reflect the complexities and hazards of the proposed activities, and should must be demonstrated by supporting information.' This note may be better suited to be included with the note from Section 1.3. Suggested Change: Consider re-locating note to Section 1.3.	No change to the location of this text. The text has been revised to add clarity, and those changes mean that it is best suited to remain where it is.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
12.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 2.5, Completing the licence application	Licensees have significant concerns with the following passages: 1. The REGDOC says the applicant "shall" submit improvement plans and "shall" identify standards to be met. Additionally, it says the applicant "shall" provide a performance assessment. The mandatory "shall" does not have a statutory basis. Unless REGDOC-1.1.2 is cited in a licence, the "shall" has no weight in this context 2. More importantly, improvement plans and performance assessments do not belong in a licence to construct. These are more appropriate during licence renewals, or licences to operate. The REGDOC is asking for information that would not exist for first constructors. The need to cite 'other' codes and standards as per the 1st sentence of the 2nd paragraph should be clarified. Codes and standards are not regulatory documents, per se. Suggested Change: CNSC staff is urged to: 1. Either remove the references to improvement plans and performance assessments or note that, in the case of a licence renewal, 'the applicant should submit improvement plans' and where changes are planned, 'the applicant should identify the standard to be met.' 2. Correct Section 2.5 to note that, in the case of a licence renewal, 'the applicant should provide a statement of performance assessment where warranted.' 3. Amend the 1st sentence of the 2nd paragraph to read, 'The application should cite CNSC regulatory documents, and ~~other~~ codes and standards that will govern program objectives that demonstrate the applicant's ability to implement the safety and control measures.'	The text pertaining to licence renewal has been removed

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			MAJOR Impact on Industry: It is important to maintain a clear distinction between requirements and guidance in all aspects of the regulatory framework. By citing items like improvement plans and performance assessments, this draft does not seem to recognize these are construction projects not ongoing operations. First-time constructors cannot be required to submit information that will not exist. A requirement to submit an improvement plan, if not warranted, will result in unnecessary project work.	
13.	Global First Power	Section 2.5, Completing the licence application	'The application should cite CNSC regulatory documents, and other codes and standards.' The CNSC regulatory documents are not codes, nor standards, thus the word 'other' is not appropriate. Suggested Change: Re-word	Text has been revised to remove the words "and other". See also comment #12. This text is now in Section 2.4
14.	Global First Power	Section 2.5, Completing the licence application	'Appendix C provides a sample format for applicants to map their supporting documents to the SCA framework.' Appendix D provides the format for mapping not Appendix C." Suggested Change: Typo – Appendix C should be Appendix D.	Text has been revised to address this typographical error. Thank you for identifying that.
15.	Global First Power	Section 2.5, Completing the licence application	'The applicant may provide cross-references to detailed information in other sections as appropriate.' In the context of paragraph 1 of Section 2.5, it is not clear what is meant by 'in other sections' since in previous section 2.4 CNSC stated 'The applicant may choose to organize the information in any structure.' Suggested Change: Suggest '…in other sections...' is replaced by '…in other application materials…'.	Text has been revised to state "The applicant may provide cross-references to other detailed sources, as appropriate".

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
16.	Global First Power	Section 2.5, Completing the licence application	'Note: If the document version in the supporting information has changed, the applicant must provide the CNSC with the new version number and a revised copy of the document.' It is suggested CNSC also require that the applicant to provide a summary of major changes between the new document version and the version that CNSC staff has previously reviewed. This is to focus CNSC's staff review on what was not previously already reviewed, rather than re-reviewing the same (and entire) material. Suggested Change: Re-word MAJOR Impact on Industry: Subsequent regulatory reviews should focus on the changes in the revisions where appropriate and not re-visit all previously submitted and reviewed material. Reviewing all material beyond the identified major changes will cause delays in licensing progression and potentially re-visit previously agreed upon conclusions.	Text has been revised to incorporate the intent of the comment, as follows: **Note:** If the document version in the supporting information has changed **since the previous submission**, the applicant must provide the CNSC with the new version number~~ and a revised copy of the document~~, **a copy of the new version, and a summary of major changes between the new version and the version previously reviewed by CNSC staff**. A new appendix E has been added to REGDOC-1.1.2, Version 2, providing a sample format for listing revisions to the supporting documentation. This text is now in Section 2.4
17.	Global First Power	Section 2.5, Completing the licence application	These sections do not seem to allow for a partial application for a Licence to Construct, similar to REGDOC-1.1.1 that allows for a partial licence to prepare site application. Suggested Change: It is suggested a partial application for LTC is allowed under REGDOC-1.1.2. This would allow flexibility to both the applicant when preparing documentation and to the CNSC staff when reviewing documentation. This is especially useful if the review of the entire scope of the application by CNSC staff is not expected to be done in parallel all at the same time. MAJOR Impact on Industry: A proponent's inability to provide all requested detail at the time of a licence to construct application will delay licensing timelines and cause undue delays to projects. Partial application similar to	The text has been revised to accept the intent of the comment, as follows: **"Combined licence applications** The applicant may apply for a combined licence that permits multiple activities (for example, a combined licence to prepare the site and to construct the reactor facility). The applicant may propose any combination of activities and CNSC staff will review each combined licence application against the applicable regulatory requirements. The applicant shall address all regulatory requirements pertaining to all stages (e.g., construction, operation) covered by the combined licence application. Applicants are strongly encouraged to discuss a combined licence application strategy with the CNSC prior to submitting an application. **Submission of licence application documentation over a defined period of time** The Commission will require a complete application, containing all information required under the

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			REGDOC 1.1.1 provides for a staged release of submittal packages and better reflects the reality of project progression. This identical comment was also submitted for section 2.6.	NSCA and its regulations – as clarified through the regulatory framework, in order to make a decision on a licence to construct a reactor facility. Given the extent of information that is required in an application for a licence to construct a reactor facility, an applicant may provide supporting documentation over a defined period of time. When using this approach, the applicant should provide a detailed project schedule of submissions with the initial licence application. As described in REGDOC-3.5.1, *Licensing Process for Class I Nuclear Facilities and Uranium Mines and Mills* [3], a licence to construct enables a licensee to construct, commission and operate some components of the reactor facility (for example, security systems). Some specific commissioning activities may be allowed, by the Commission through issuance of a licence to construct, to demonstrate that the facility has been constructed in accordance with the approved design, and that the systems important to safety are functioning as intended. The applicant must demonstrate that the proposed design of the facility conforms to regulatory requirements and is capable of operating safely on the designated site over its' proposed lifecycle." This text is now in Section 2.4
			<u>Feedback on CNSC Response:</u> Industry appreciates the flexibility of the revised text, though further clarification is sought during the workshop regarding the wording around the partial licence application. See related comment #20 and #28. As written, it acknowledges that submittals can be provided per a previously agreed schedule with the CNSC. However, it still expects a fully complete application to be submitted. Given that some of the submittals would come later per agreed schedule, is there a potential for CNSC staff to reject an application based on their sufficiency review which would not account for future submittal packages?	<u>Additional Response:</u> Refer to the changes above Discussions regarding previous comments were deemed to have addressed this concern.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
18.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 2.6, Submitting the licence application	The REGDOC notes that applicants are encouraged to submit applications electronically, but provides no email or web address for that purpose. Suggested Change: Provide an email address or web address to permit electronic submission. Request for clarification	Text has been revised for clarity. Note that "in electronic format" does not mean by email. As noted in section 2.5, prescribed information shall not be submitted by unencrypted email.
			<u>Feedback on CNSC Response:</u> Industry appreciates the added clarity and suggest the note and following line, which says, "that 'in electronic format' does not mean by email" may not be necessary. Some licensees are likely to send a LTC application and packages via email as per their usual practice for most regulatory submissions. It is understood only prescribed/security protected portion of the application (if applicable) needs to be submitted by a secure means (typically double enveloped mail). The rest may be sent as an email or uploaded to an ftp site.	<u>Additional Response:</u> Refer to the changes above Workshop participants expressed their desire to submit materials via email; CNSC staff confirmed that this was acceptable so long as the size of file was suitable and appropriate security provisions were followed.
19.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 2.6, Submitting the licence application	The Treasury Board Secretariat Policy on Government Security (effective July 1, 2019) was reviewed. This policy does not provide 'guidance for the protection and transmission of prescribed information.' Suggested Change: Remove the reference to the Policy on Government Security. Request for clarification	Text has been revised for clarity. The reference to the *Policy on Government Security* is provided as a source of guidance, context and recommended practices on handling, submitting and transmitting assets considered security-sensitive (such as prescribed information). Some of the additional information is provided in the related directives, which are accessed as subdocuments on the same website. See also response to comment #59.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
20.	Global First Power	Section 2.6, Submitting the licence application	These sections do not seem to allow for a partial application for a Licence to Construct, similar to REGDOC-1.1.1 that allows for a partial licence to prepare site application. Suggested Change: It is suggested a partial application for LTC is allowed under REGDOC-1.1.2. This would allow flexibility to both the applicant when preparing documentation and to the CNSC staff when reviewing documentation. This is especially useful if the review of the entire scope of the application by CNSC staff is not expected to be done in parallel all at the same time. MAJOR Impact on Industry: A proponent's inability to provide all requested detail at the time of a licence to construct application will delay licensing timelines and cause undue delays to projects. Partial application similar to REGDOC 1.1.1 provides for a staged release of submittal packages and better reflects the reality of project progression. This identical comment was also submitted for section 2.5.	The text in section 2.5 (now Section 2,4) has been revised to accept the intent of the comment. For more details, see response to comment 17.
			<u>Feedback on CNSC Response:</u> Industry appreciates the revisions, but believe the wording around the partial licence application needs further clarification during the workshop. See related comment #18 and #28 As written, it acknowledges that submittals can be provided per a previously agreed schedule with the CNSC. However, it still expects a fully complete application to be submitted. Given that some of the submittals would come later per agreed schedule, is there a potential for CNSC staff to reject an application based on their sufficiency review which would not account for future submittal packages	<u>Additional Response:</u> No changes to the document. Discussions regarding previous comments were deemed to have addressed this concern.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
21.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 3.1.2, Mailing address and 3.1.3, All persons who...	The REGDOC says applicants "should provide a list of names … of all persons authorized by the applicant to interact with the CNSC." The REGDOC further recommends that the information is subject to confidentiality requirements. Unless the draft REGDOC intends the word interact to mean act for the applicant, this is likely to be a very broad list. Even if the two are intended to be synonymous, it is unlikely that a list of names, positions, and contact information would be subject to exemption from release under the Access to Information Act. Instead, this information should not be provided. It is unclear why this information should be submitted with an application, addressed to the Secretariat. Licensees acknowledge and support the practices of informal contact between CNSC staff and applicants/licensees, but note that this interaction may be in support of an application and need not be supplied directly to the Secretariat (and public) as part of an application. Suggested Change: Remove the following paragraph: 'The applicant should provide a list of names, positions and contact information … subject to confidentiality requirements.' Alternatively, change 'interact' to 'act for the applicant.'	Text has been revised as follows: - The subtitle is now "3.1.3 Applicant authority" That "the applicant shall notify the Commission of the persons who have authority to act for them…" is a requirement under section 15 of the *General Nuclear Safety and Control Regulations*. That "the applicant should provide a list of names … of all persons who are authorized by the applicant to interact with the CNSC" is provided as guidance and is optional. However, the applicant must consider that the CNSC cannot discuss an applicant's information, provide information of any type or level, or accept requests from someone who presents themselves as being authorized by the applicant to interact with the CNSC, unless the CNSC has received written confirmation from the applicant that this person is, indeed, authorized. As stated in the current text, the applicant may request that, for security reasons, this information be subject to confidentiality requirements.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
22.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 3.1.4, Proof of legal status and 3.1.5, Evidence that the applicant is...	The REGDOC says applicants should provide revised proof of legal status if an organization wishing to renew a licence has had a change of name. This guidance may be inconsistent with the NSCA. If an organization changes its name, would that new organization be licensed under the NSCA? It is industry's understanding that a transfer of licence would be required. As such, proof of legal status should presumably be provided when applying to transfer a licence, not when renewing a licence. Suggested Change: Remove the sentence: 'When submitting an application to renew a licence… organization name has changed.'	No change. Just because an organization changes its name, it does not mean it is a different organization. If this is simply a name change, it is allowed. There is a process for transferring a licence, and if an organization does more than a simple name change, then they can follow that process.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
23.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 3.2.3, Description of site, 3.2.4, Description of the facility's existing licensing status and 3.2.5, Nuclear and hazardous substances	Pursuant to the Class I NFR, Section 3, the REGDOC correctly notes that the application "shall" contain the name of any hazardous substance that may be on the site. This requirement is extremely broad and challenging to apply. Specifically, what is a hazardous substance? While Section 1 provides a definition, it is not adequate from the perspective of technical staff who must understand this requirement and prepare a complete application. Note that a complete list may be impossible to generate in advance, given the wide variety of activities required during construction. Suggested Change: Add guidance to Section 3.2.5 to more clearly define the scope of hazardous substances. MAJOR Impact on Industry: The CNSC has the opportunity to clarify a particularly vexing issue that is encountered regularly by the industry. (While the REGDOC focuses specifically on applications to construct a nuclear facility, the same requirement applies to applications to renew licences for existing facilities.) Guidance would be particularly appreciated as technical staff will be required to wrestle with this issue when preparing a future licence to construct (or similarly, when preparing licence renewals).	No change to REGDOC-1.1.2, Version 2. This regulatory document is not the appropriate place for wider-ranging information on hazardous substances to be documented. However, this comment and the overall issue have been noted and will be sent to the appropriate CNSC management representatives and technical specialists. A solution outside of this regulatory document will be found. As an interim solution, REGDOC-3.6, *Glossary of CNSC Terminology*, defines a hazardous substances as "A substance, other than a nuclear substance, that is used or produced in the course of carrying on a licensed activity and that may pose a risk to the environment or the health and safety of persons."
			<u>Feedback on CNSC Response:</u> Industry seeks further discussion on this point as a workshop item. Licensee's original concern remains. While finding a "solution outside the regulatory document" might work if it's found prior to an LTC application, industry is in the same predicament if a solution is not found ahead of time. Also, without guidance, the list will be very high level and limited. This "shall" statement would be challenging to meet for an LTC application.	<u>Additional Response:</u> No change to the document. Workshop participants requested clarity as to what was meant by 'outside of this regulatory document'. CNSC Staff described how this would be something revised more broadly and would be a separate project where the information and opportunity to comment would be provided to all interested parties.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
24.	Global First Power	Sections 3.2.3, Description of site, 3.2.4, Description of the facility's existing licensing status and 3.2.5, Nuclear and hazardous substances	(for section 3.2.3): Is inner area and vital area defined somewhere, they are not included in the glossary of this REGDOC? Requesting clarification on the definitions for inner and vital areas.	No change to REGDOC-1.1.2, Version 2. The terms "inner area" and "vital area" are both defined in the *Nuclear Security Regulations* and both are reprinted verbatim in REGDOC-3.6, *Glossary of CNSC Terminology* (which is referenced in the glossary of REGDOC-1.1.2, Version 2). The *Nuclear Security Regulations* are currently being reviewed. If any definitions change in the regulations, then REGDOC-3.6, *Glossary of CNSC Terminology*, will be revised to include the new definitions.
25.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 3.3: 3.3.1, Certificates and other licences, 3.3.2, Similar facilities and 3.3.3, Supporting information	The heading of this section refers to 'certificates.' However, the content of the section makes no reference to certificates. Suggested Change: Remove 'certificates' from the heading of Section 3.3.1.	Text has been revised for clarity. The heading has been returned to the original wording of "Permits, certificates and other licences" (as used in REGDOC-1.1.3), and text has been added to describe examples of permits and certificates.

	Reviewer	Section or Para.	Reviewer’s Comment and Proposed Change	Response
26.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 3.3: 3.3.1, Certificates and other licences, 3.3.2, Similar facilities and 3.3.3, Supporting information	The content of this section does not specify whether the supporting information is required or recommended. In order to prepare a complete application that meets statutory requirements, it is critical to specify “shall”, “should”, or “may”, as applicable. Please note that this information is likely to be mandatory, pursuant to GNSCR, Section 3(1)(i). Also, a word may be missing from the second bullet: 'Supporting information includes: … those [???] that have been submitted to, received from, or published by a foreign national regulatory body.' This statement appears to be fragmentary and needs to be revised for clarity. Suggested Change: Revise Section 3.3.3 to note that “supporting information shall be included, including the results of experimental programs, tests or analyses …” Include the missing word(s) from the 2nd bullet and revise to read: “Supporting information may be included, including those [???] that have been submitted to, received from, or published by a foreign national regulatory body.	Text has been added to clarify that (as per GNSCR Section 3(1)(i)), the applicant shall include “a description and the results of any test, analysis or calculation performed to substantiate the information included in the application”. The second bullet point has been revised for clarity, to state “information that has been submitted to, received from, or published by a foreign national regulatory body”.
27.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.0, Safety Policies, Programs, Processes, Procedures and Other Safety and Control Measures	The introductory paragraphs are unclear. If read literally, the introductory paragraphs express requirements that are not statutory requirements and should not be included in this REGDOC. The two initial sentences make three separate statements, which are unclear at best. Specifically: 1. “The applicant’s safety policies [etc] shall address all relevant sections in the NSCA…” On the surface, this appears to state that the applicant shall follow the law. It may be that this statement is intended to mean that the application shall address all relevant sections of the NSCA. As this	Text has been revised and expanded to add clarity in response to this and other comments. This text provides a contextual introduction to all subsections of Section 4. This contextual information is not limited to the management system. Summary information about the applicant’s flexibility in choosing to organize their information in any structure has been added, with a cross-reference to the location of more details. Information about the applicant’s flexibility in applying a risk-informed graded approach has been added.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			is the purpose of the licence application guide, such a statement is redundant at best. 2. "[The applicant's safety policies, etc.] shall also address the CNSC's safety and control areas." On the surface, this appears to state that the applicant's management system should address the CNSC's regulatory framework. Other than meeting legal requirements, it is not clear how to do so. Should the management system be structured to align with the CNSC's regulatory framework? Such a requirement would be unduly burdensome. Instead, it is assumed that this statement is intended to mean that the application shall address all CNSC safety and control areas. However, no such requirement exists under the NSCA, and the application guide is intended to provide that structure (as a guide, not a requirement). This statement is redundant at best. 3. "The applicant's policies, programs, [etc] shall also address other matters of regulatory interest." On the surface, this appears to state that the applicant's management system should address the CNSC's regulatory framework. Other than meeting legal requirements, it is not clear how to do so. Should the management system be structured to align with the CNSC's regulatory framework? Such a requirement ("shall") would be unduly burdensome. Instead, it is assumed that this statement is intended to mean that the application shall address other matters of regulatory interest. However, no such requirement exists under the NSCA, and the application guide is intended to provide that structure (as a guide, not a requirement). This statement is redundant at best. Suggested Change: Remove introductory paragraphs) to Section 4 or revise to clarify their intent.	

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28.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.0, Safety Policies, Programs, Processes, Procedures and Other Safety and Control Measures	To avoid ambiguity, the subsections of 4.1 and 4.2 must clearly state where the information suggested to be provided has to be relevant to the construction phase or/and to the future commissioning and operation of the plant. Suggested Change: The CNSC is urged to provide rationales, guidance, and examples on what information is to be provided at the various phases of a project including the construction, commissioning and operation stages. MAJOR Impact on Industry: A proponent's inability to provide requested detail at the time of a licence to construct application will delay licensing timelines and cause undue delays to projects.	Text has been revised to add information about submitting documentation over a defined period of time ; see section 2.4. As stated in the response to comment 5, the series of related regulatory documents (REGDOC-1.1.1, REGDOC-1.1.2 V2, REGDOC-1.1.3, REGDOC-1.1.4 (under development) and REGDOC-1.1.5) provides a structure for the applicant to consider a cohesive, integrated plan that becomes more detailed and less preliminary as the reactor project moves through the lifecycle phases.
			<u>Feedback on CNSC Response:</u> Industry seeks further discussion on this point as a workshop item and requests the revised text be shared ahead of time so participants can offer CNSC staff a more fulsome, contextual review based on the actual changes. See related comment #17 and #20. While the intention is understood, the challenge is that the completeness of any licence to construct application will be judged based on a comparison to the requirements and guidance stated in this REGDOC. That is subject to interpretation. Also, in some cases, requirements in this REGDOC are more restrictive than the REGDOC 1.1.3, which seems to be the opposite of the flow stated here and in response #5. Hesitancy will exist whenever there is ambiguity and words are open to the interpretation of staff that may not have been involved in the writing and aware of the author's intent.	<u>Additional Response:</u> Refer the changes documented above Discussions regarding previous comments were deemed to have addressed this concern.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
29.	Global First Power	Section 4.0, Safety Policies, Programs, Processes, Procedures and Other Safety and Control Measures	'The applicant's safety policies, programs, processes, procedures and other safety and control measures shall address all relevant sections in the NSCA and the regulations made under the NSCA (see appendix A), and shall also address the CNSC's safety and control areas (SCA's).' Not all 14 SCA's may be applicable to support a license to construct a reactor facility. Statement is made such that all 14 SCA's must be addressed. Suggested Change: Suggest that this paragraph be reviewed from the perspective of allowing the applicable SCA's to support a LTC phase for Reactor Facility.	No change to the text. A licence to construct extends to fuel-out commissioning; therefore, all SCAs must be addressed to a certain extent. In addition, construction leads to the future fuel-in commissioning and operation of the reactor facility. The applicant may submit documentation over a defined period of time covering some SCAs, if the application includes a detailed schedule of when the other SCAs will be addressed. If an applicant is proposing a technology where an SCA does not apply, the applicant may state that in their licence application, along with a justification of why it does not apply.
			Feedback on CNSC Response: Licensees request wording be added to clarify that SCAs will be addressed "to the extent practicable." For a Licence to Construct, it is unrealistic to assume that all SCAs will be concisely addressed in an LTC. Furthermore, the CNSC disposition that references future operation further perpetuates the notion that the CNSC is expecting a level of operational readiness which is not commensurate with the maturity of the project at time of an LTC application.	Additional Response: Workshop participants wanted to better understand the level of detail needed for addressing the SCAs. Staff clarified that this is expected to be project-specific and based on the activities covered under the licence application. It is industry's role to make their case and demonstrate why specific requirements and guidance are not applicable. Note that this document is now focused on design, construction and fuel-out commissioning.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
30.	Global First Power	Sections 4.1, Management system, 4.1.1, General consideration s	'The management system SCA covers the framework that establishes the process and programs required to ensure an organization achieves its safety objectives…..' A management system under this SCA is established to ensure that the business objectives are met through an integrated approach. The business must satisfy the safety objectives as required for an integrated management system, not 'an organization.' Suggested Change: Suggest rewording this paragraph with a focus on the business' rather than an 'organization'.	No change to this specific text. This paragraph is the CNSC's definition of the CNSC's Management System SCA. In addition, the CNSC approves a licence for an organization (the licence is not approved for a business). However, in the broader scheme of terminology, the terms "organization" and "business" are sometimes synonymous. The applicant's management system may address how their business is managed. The CNSC will not penalize an applicant's submission if the applicant uses "business" and not "organization".
31.	Global First Power	Sections 4.1, Management system, 4.1.1, General consideration s	'An integrated management system includes health, safety, environment, security, economics, and quality.' The paragraph has limited the management system to health, safety and environment only. Suggested Change: Suggest rewording this paragraph on the bases of an integrated management system applied in the industry.	No change. This licence application guide addresses the subjects under consideration by CNSC staff when reviewing an application. The CNSC's mandate is to regulate "the use of nuclear energy and materials to protect health, safety, security and the environment; to implement Canada's international commitments on the peaceful use of nuclear energy; and to disseminate objective scientific, technical and regulatory information to the public". Security and quality are covered in other SCAs, and economics is not part of the regulatory framework. The applicant may choose to provide additional information based on the operating paragraph of CSA N286-12: "This standard identifies management system requirements for nuclear facilities. It integrates the requirements from management system standards for health, safety, environment, security, economics, and quality."
32.	Global First Power	Sections 4.1, Management system, 4.1.1, General consideration s	'The application should also describe the safety policies, the roles of external safety assessment organizations…' It is not clear if the vendor/designer organization performing safety analysis/assessments in support of the licence application will be considered as 'external' to the applicant/operator.	Text has been removed Note that this text is not referring to safety analysis. Safety assessment in this context refers to entities who assess and advise the applicant/license on whether their management system is functioning as intended and fit for purpose.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
33.	Global First Power	Section 4.1.2, Management system	As a point of clarity, REGDOC 2.1.1 is an 'informational' regulatory document, as opposed to a 'requirement'. Consider rewording this paragraph to clarify that REGDOC 2.1.1 is informational and not a requirement.	Text has been revised to state "The application should describe the management system and its implementation, including how the main features are compliant with the relevant requirements of CSA N286-12, *Management system requirements for nuclear facilities* [6], and considering the information in REGDOC 2.1.1, *Management System* [7]".
34.	Global First Power	Section 4.1.2, Management system	The 1st bullet that states the management system is integrated to the applicant's business purpose and safety culture should be the basis for the management system SCA rather than that as described in section 4.1 above. These 2 statements, that in 4.1 and this bullet are not aligned. Suggested Change: Bullet support the change requested in 4.1 above.	Text has been revised to remove business purpose from the list. In addition, the note under bullet point #2 ("the requisite processes are defined…") has been removed.
35.	Global First Power	Section 4.1.2, Management system	'The application should describe how the system will address internal and external factors while ensuring that safety is maintained.' It is not clear what it is referred to by 'internal and external factors' in the context of this paragraph and the management system, especially for construction activities.	Text has been deleted.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
36.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.3, Organization; Section 4.4.1	Licensees believe the following do not align with current standards and regulatory guidance: • 'maintaining an "intelligent customer" capability for all work that may affect nuclear safety that is carried out on its behalf by any of the Tier 1 (main) contractors and suppliers (that is, engineering, procurement and construction (EPC); engineering, procurement and construction management (EPCM); and project management consultants and contractors (PMC+C)) • ensuring the EPC, EPCM or PMC+C contractor maintains an "intelligent customer" capability for all work carried out by the contractor's supply chain that may affect nuclear safety; for example, where a Tier 2 contractor (subcontractor) may use its own supply chain to meet the needs of its Tier 1 customer, and will need to procure items or services appropriately'. Suggested Change: The requirements of the intelligent customer need to flow through the supply chain as applicable and should be aligned with CSA N286. MAJOR Impact on Industry: Implementation would cause misalignment with CSA N286, REGDOC-2.1.1 and current industry practices. This identical comment was submitted for sections 4.1.3 and 4.4.1.	No change. The CNSC believes this information is aligned with CSA N286, and sees no conflict between this information in these documents. The CNSC agrees that applicants require flexibility in organizing their management system, and believes that this text indicates what the CNSC needs to receive while allowing flexibility. The concept of "intelligent customer" is already included in the regulatory framework, in REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs*.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Feedback on CNSC Response: Industry seeks further discussion on this point as a workshop item. See related comments 48, 49, 54, 85 and X. The intelligent customer definition here includes "supervising" of external work, for example, which will make projects extremely inefficient. The disposition simply documents CNSC's previous position, which is different than industry's understanding. A path forward is required.	Additional Response: Text has been revised for clarity. The glossary definition of intelligent customer was updated.
37.	Global First Power	Section 4.1.3, Organization	Readiness for operation 'The application should describe the applicant's management system and organizational arrangements for the transition from construction to commissioning to operation. This transition plan should..' This sentence suggests that the applicant should have a management system for this transition. Recommend rewording this sentence such that the transition period is to be described in the applicant's management system. This same comment applies to bullets mentioned. All suggest that a separate management system is needed, when in fact, an applicant's overall management system will be able to describe these transition periods. Suggested Change: Reword	Text pertaining to readiness for operation has been removed
38.	Global First Power	Section 4.1.3, Organization	'the applicant must provide sufficient information to show that adequate provisions have been made in the design to address readiness for operation'. Since this REGDOC is for a construction licence, should it rather be that 'adequate provisions have been made in the construction phase to address readiness for operation'?' Suggested Change: Re-word	Text pertaining to readiness for operation has been removed

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
39.	Global First Power	Section 4.1.4, Performance assessment, improvement and management review	'…internal self-evaluation program supported by periodic external reviews…' This REGDOC is for the construction phase activities for a project. For SMRs with very short construction schedules, it may not be feasible to have periodic external reviews. Suggested Change: Re-word	Text has been revised to remove the reference to periodic external reviews.
40.	Global First Power	Section 4.1.4, Performance assessment, improvement and management review	'The applicant should describe the program…..' Suggest replacing programs with 'processes'. It doesn't need to be a program, a procedure or process can suffice. This comment applies wherever [sic] the term program is used in this section. Suggested Change: Re-word	Section 4.1.4 has been removed and consolidated into sections 4.1.1 and 4.1.2. Elsewhere in the document. where appropriate, text has been revised from "program" to "provisions". However, in some situations (such as the human performance program), the term "program" has been maintained.
		Section 4.1.5, Operating experience	Operating experience, paragraph - 'The application should describe how the program…' Same comment as in the previous section, request that this term 'Program' not be used in this section or other sections. Recommended replace is process or procedure. What is meant by 'high quality'? Recommend deleting 'high'. Suggested Change: Re-word	

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
		Sections 4.2.2, Human performance program and 4.2.3, Personnel training	Human performance program, and the term "program" in this section. This is general a comment through out this REGDOC, where the term "program" is used for a particular area. In many cases a requirement can be met through a "process" or "procedure" a "program" is not required. Request that in the entire REGDOC the term "program" is replaced with "process" or "procedure" where applicable." Suggested Change: Replace the term "program" with "process" or "procedure" where applicable.	
41.	Global First Power	Sections 4.2.2, Human performance program and 4.2.3, Personnel training	'…to remove human performance-related root causes of events.' Removing something, means that the something already exists prior to trying to remove it. If human performance related causes already exist, they cannot be removed. One can "remove" future similar errors, which means the measures to do that will focus on past causes/events." Suggested Change: A more meaningful aim would be '…to prevent human performance-related causes of events.' This means the measures will focus both on past experiences but also on proactive thinking.	Section 4.2.2, Human performance program, has been removed. The specific wording was not in the Personnel training section.
42.	Global First Power	Section 4.2.6, Work organization and job design	1st paragraph last 2 words, 'systematic analysis'. Clarification in needed on what is meant by 'systematic analysis'?	Text has been removed.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
43.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.2.7, Fitness for duty, and 4.3.3, Safe operating envelope, 4.3.4, Outage management performance and 4.3.5, Accident and severe accident management and recovery, 4.4, Safety analysis, and 4.5.3	Regarding the section on Fitness for Duty, industry has invested considerable effort to implement the various volumes of REGDOC-2.2.4, (Managing Worker Fatigue; Managing Alcohol and Drug Use; Nuclear Security Officer Medical, Physical and Psychological Fitness). It is important that future drafts of REGDOC-1.1.2 not circumvent existing fitness for duty programs or implementation plans related to any of these elements. This identical comment was submitted for sections 4.2.7, 4.3.3, 4.3.4, 4.3.5, 4.4, and 4.5.3.	No change. REGDOC-1.1.2, Version 2 does not circumvent existing fitness for duty programs or implementation plans. Further, CNSC staff believe that there is consistency within the regulatory framework, including this REGDOC-1.1.2, Version 2, and CNSC staff will ensure that this consistency is maintained in future updates. Section 4.2.7, Fitness for duty, has been deleted, and relevant material is now in Section 4.2.1.
44.	Global First Power	Section 4.3.2, Procedures	Section on concrete structures. The use of off-site pre-cast concrete is not addressed. This activity can also be performed prior to the construction phase, ie before a LTC is in place which does not seem to be covered by the wording. Suggested Change: Re-word to include reference to pre-cast concrete. Pre-cast concrete is important in order to reduce construction time and improve quality control by performing it off-site. This would also include concrete for important to safety structures.	Text has been revised to specify that concrete that was precast offsite is acceptable.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
45.	Global First Power	Sections 4.3.3, Safe operating envelope, 4.3.4, Outage management performance and 4.3.5, Accident and severe accident management and recovery	(for section 3.3.3) The wording on fuel bundle, fuel channel etc. is not applicable to advanced reactor designs. The requirements cannot be met or measured as required in some advanced reactor designs. The intent of the requirements should rather be stated. Suggested Change: Re-word to consider designs which do not include these components.	Sections 4.3.3, Safe operating envelope, 4.3.4, Outage management and performance, and 4.3.5, Accident and severe accident management and recovery, have been deleted from the document.
46.	Global First Power	Sections 4.3.3, Safe operating envelope, 4.3.4, Outage management performance and 4.3.5, Accident and severe accident management and recovery	Safe operating envelope. 'The application should state the safe operating limits and conditions pertaining to reactor core, channel and fuel bundle powers. The information submitted should describe how the applicant will comply with limits imposed by the design and safety analysis assumptions – for example, the total power generated in any one fuel bundle, the total power generated in any fuel channel, and the total thermal power from the reactor fuel. The application should clearly describe the actions to be taken if the limits and conditions are not met.' Suggested Change: Should be reworded to accommodate advanced reactors that don't have traditional channels and bundles, in some the fuel is carried by a liquid. The requirement as it stands is written for CANDU type plants.	Sections 4.3.3, Safe operating envelope, 4.3.4, Outage management and performance, and 4.3.5, Accident and severe accident management and recovery, have been deleted from the document.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
47.	Global First Power	Sections 4.4, Safety analysis and 4.4.1, General considerations	'…so that the final safety analyses reflect the finished reactor facility design. … to ensure that the design intent will be achieved in the "as built" reactor facility.' This seems to request a final safety analysis at the construction application time. The "final" safety analysis reflecting the finished reactor facility design was traditionally included in a Final Safety Analysis Report (FSAR) and expected to be included in the operating licence application. The "final" safety analysis will indeed reflect the facility "as built", but it should be expected for an operating licence application (in REGDOC-1.1.3), not for a construction licence application (REGDOC-1.1.2). Suggested Change: CNSC is expected to clarify what is meant by "final safety analyses" in the context of this guidance for construction licence applications.	Text has been revised for clarity. The phrase "so that the final safety analyses reflect the finished reactor facility design" has been removed.
48.	Global First Power	Sections 4.4, Safety analysis and 4.4.1, General considerations	'…and in accordance with "intelligent customer" principles.' The CNSC is requested to clarify in the document what is meant and expected by this statement in the context of that particular paragraph. A clarification note will ensure clarity regarding the expectations. Suggested Change: Clarification required.	Terminology was updated to "informed customer". With respect to the concept of "informed customer", the CNSC expects that the work is sufficiently scoped and supervised. For further context, see the definition in the glossary of the consultation draft of REGDOC-1.1.2, Version 2. Note that the final definition will be removed from the published version of REGDOC-1.1.2 V2 and added to the CNSC's REGDOC-3.6, *Glossary of CNSC Terminology* in a near-future update.
49.	Global First Power	Sections 4.4, Safety analysis and 4.4.1, General considerations	The concept of "intelligent customer" is new and should be defined in the glossary. Suggested Change: Define in the Glossary.	Terminology was updated to "informed customer"; a definition of "informed customer" is included in the glossary of the draft of REGDOC-1.1.2, version 2 that was posted for consultation. This definition comes from the IAEA GS-G-3.5, *The Management System for Nuclear Installations*, published in 2009. The final definition will be added to the CNSC's REGDOC-3.6, *Glossary of CNSC Terminology* in a near-future update.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
50.	Global First Power	Section 4.4.6, Severe accident analysis	The beginning of Section 4.4.6 (Severe accident analysis) mentions REGDOC-2.3.2 Accident Management as a requirement (shall) when performing severe accident analysis: 'The applicant shall demonstrate that a severe accident analysis has been performed in accordance with the requirements of: …REGDOC-2.3.2.' REGDOC-2.3.2 is not a guidance for performing severe accident analysis; severe accident analysis results can be inputs into accident management (which is the scope of REGDOC-2.3.2). REGDOC-2.3.2 is already sufficiently and adequately used as a reference in Sections 4.3.5 and 4.4.8. In the context of section 4.4.6 how does the CNSC anticipate an applicant for a construction licence demonstrating compliance with REGDOC-2.3.2. Suggested Change: CNSC is requested to remove the reference to REGDOC-2.3.2 here as the clause in section 4.3.5 is sufficient. Alternatively, provide additional clarification on what specifically is required or meant in this section 4.4.6 with respect to REGDOC-2.3.2.	Text has been revised to address the intent of the comment. The results of safety analysis inform accident management.
51.	Global First Power	Section 4.4.6, Severe accident analysis	BDBA description - The description and requirements on BDBAs do not seem to be technology independent. Suggested Change: Re-word section to make technology independent.	Text about BDBAs has been revised to state “severe accidents”. Text has also been revised to remove the example that could be interpreted as being technology dependent.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
52.	Global First Power	Section 4.4.6, Severe accident analysis	The severe accident analysis is one of the areas where it is important to mention that a risk informed graded approach can be applied. For most SMRs and Advanced Reactors, there will be very few or maybe even no 'accidents that can lead to significant core damage, and/or offsite releases of radioactive material (severe accidents)'. Suggested Change: The CNSC should mention that a risk informed graded approach to severe accident analysis can be used, especially for advanced reactors.	Text has been revised to add "where applicable" and to remove the examples. The application of a risk-informed graded approach has been described in more detail in other areas of this regulatory document, and will be explained in REGDOC-3.5.3, *Regulatory Fundamentals*.
53.	Global First Power	Section 4.4.6, Severe accident analysis	'The format and content of the beyond-design-basis accident (BDBA) analyses should be consistent with the presentation of the analyses for anticipated operational occurrences and design-basis events.' The format and content of risk informed graded approach severe accident analysis may likely not be consistent with the analysis for AOOs and DBAs. Suggested Change: The CNSC is asked to adjust or remove this expectation.	Text has been revised to state: "The ~~format and~~ content of the severe accident analyses should be consistent with the presentation of the analyses for anticipated operational occurrences and design-basis events."

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
54.	Global First Power	Section 4.5.1, General considerations	'The application should also describe the programs and oversight in place to ensure that the design is carried out by technically qualified and appropriately trained staff, and is in accordance with the management system program supporting design and in accordance with "intelligent customer" principles. The information should demonstrate that all contractors and subcontractors involved in the design are qualified to carry out their respective activities.' The requirements of this paragraph overlap with some of the requirements in Section 4.1.3. The requirements from section 4.1.3 include also the design scope in addition to the pre-construction, construction, commissioning scopes. Suggested Change: It is suggested this paragraph is removed or it is clarified what is it asked here in addition to or different from what is asked in Section 4.1.3.	No change. The applicant must demonstrate that they are qualified to oversee the design.
55.	Global First Power	Section 4.5.1, General considerations	'..conforms to high standards..' Please explain what is required to conform to 'high standards.' Suggested Change: Clarify what is meant by 'high standards' to avoid ambiguity.	That bullet point has been removed.
56.	Global First Power	Section 4.5.1, General considerations	Description of SSC - It is unclear how the requirements take into consideration the safety classification of SSC or allow for a graded approach in level of detail provided in these sections. Suggested Change: Provide clarification.	Text has been revised to remove "in detail" and to add "commensurate with the safety classification".

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
57.	Global First Power	Section 4.5.1, General considerations	'behaves as predicted for novel aspects of the design' 'Novel' can have a negative connotation that invites scrutiny and is open to interpretation. Suggested Change: Re-word	That bullet point has been removed.
58.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.5.3, Design principles and requirements	Section 4.5.3, Design principles and requirements, sub-section "Robustness against malevolent acts" says the Treasury Board Secretariat Policy on Government Security (effective July 1, 2019) was reviewed. This policy does not provide "guidance for the protection and transmission of prescribed information." Suggested Change: Revise Section 4.5.3, Design principles and requirements, sub-section "Robustness against malevolent acts" to remove the reference to the Policy on Government Security.	Text has been revised for clarity. The reference to the *Policy on Government Security* is provided as a source of guidance, context and recommended practices on handling, submitting and transmitting assets considered security-sensitive (such as prescribed information). Some of the additional information is provided in the related directives, which are accessed as subdocuments on the same website. See also response to comment #19.
59.	Global First Power	Section 4.5.3, Design principles and requirements	'..conforms to high quality levels' Suggest 'appropriate quality levels'. High is open to interpretation and comparison to existing NPPs. Suggested Change: Re-word	Text has been revised as follows: - the first bullet now states "conforms to applicable codes and standards" - the second bullet now says "considers operating experience (OPEX) and the latest research and development (R&D) The second bullet was revised to be consistent with the changes made to section 4.5.1 (see comment 55).

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
60.	Global First Power	Section 4.5.3, Design principles and requirements	'….Safety goals include qualitative and quantitative safety goals, core damage frequency, and small and large release frequencies…' For many SMRs core damage frequency and small and large release frequencies do not apply. Suggested Change: Suggest following wording - 'The quantitative safety goals for the SMRs may be expressed in terms of frequency of radionuclide releases and represented on a frequency / consequence diagram.'	Text has been revised to remove that sentence.
61.	Global First Power	Section 4.5.8, Reactor and reactor coolant system	This section assumes a PWR design. Suggested Change: Requirement should be generalized to be applicable to SMRs as well. MAJOR Impact on Industry: This section appears to have been written exclusively for water-cooled current designs. Many SMR designs have enhanced safety features in addition to those of traditional reactor designs. Consequently, their risk profile is even further reduced. Regulatory requirements stipulated for such advanced reactor designs need to take these enhancements into consideration. Unless that difference is reflected in an application guide, Canada's ability to encourage new reactor proponents and attract necessary financial investment will be inappropriately impacted.	Text has been revised throughout this section to remove any specific references to PWR designs, and to state more explicitly that the examples provided are examples that may not apply to all reactor technologies.
62.	Global First Power	Section 4.5.9, Safety systems and safety support	'…when the reactor power control system and the inherent characteristics are insufficient or incapable of maintaining reactor power within the requirements of the SOE.' SMRs make use of inherent and intrinsic features to achieve a	No change. It is a regulatory requirement to have redundant means for reactor shutdown. The information articulated in this section is used to "ensure the safe shutdown of the reactor or the residual heat removal from the core, or limit the consequences of AOOs and DBAs". It is reasonable to assume that AOOs and DBAs could create an imbalance of the inherent reactor

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
		systems	controlled or safe state. These are typically material properties that are not expected to fail or change significantly over time. The assumption that an additional active safety system is required as DiD for an inherent or intrinsic feature is excessive. Suggested Change: Requirement should be generalized to be applicable to SMRs as well and consider enhanced safety features built into new designs. MAJOR Impact on Industry: This section appears to have been written exclusively for water-cooled current designs. Many SMR designs have enhanced safety features in addition to those of traditional reactor designs. Consequently, their risk profile is even further reduced. Regulatory requirements stipulated for such advanced reactor designs need to take these enhancements into consideration. Unless that difference is reflected in an application guide, Canada's ability to encourage new reactor proponents and attract necessary financial investment will be inappropriately impacted.	characteristics through various means of actions, such as leaks. CNSC staff note that OPEX from the 'passive' CANDU control rods has demonstrated that there are unforeseen means of failure. All reactors must be capable of being shutdown under all circumstances. If there are specific criteria, CNSC staff would appreciate industry identifying and providing context as to why they are specific to water-cooled designs.
			Feedback on CNSC Response: Industry seeks further discussion on this as a workshop item. Many SMR designs will not rely on two independent, engineered shutdown systems and CNSC's response to this comment appears to be at odds with many of the Gen IV designs. Perhaps wording on graded approach and demonstration of inherent safety in the design would be useful.	Additional Response: No change to the document. There is significant ongoing effort by CNSC staff on this technical consideration. CNSC staff will continue to advance work on this subject and communicate externally once the resolution has been established.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
63.	Global First Power	Section 4.5.9, Safety systems and safety support systems	Systems supporting Confinement and Containment - This section has a strong LWR focus. SMRs may have one or more of the listed systems depending on the technology. Suggested Change: Requirement should be generalized to be applicable to SMRs as well and consider enhanced safety features built into new designs. MAJOR Impact on Industry: This section appears to have been written exclusively for water-cooled current designs. Many SMR designs have enhanced safety features in addition to those of traditional reactor designs. Consequently, their risk profile is even further reduced. Regulatory requirements stipulated for such advanced reactor designs need to take these enhancements into consideration. Unless that difference is reflected in an application guide, Canada's ability to encourage new reactor proponents and attract necessary financial investment will be inappropriately impacted.	Text has been revised to refer to "SSCs supporting containment and means of confinement", and to highlight flexibility. Otherwise, CNSC staff were unable to locate any criteria specific to water-cooled designs. Industry may identify the specific criteria and provide context as to why they are specific to water-cooled designs at the upcoming workshop.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
64.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.5.2, Site characterization	Similar to [the comments for sections 2.5 and 4.2.4], Section 4.6 and its subsections expect a level of refinement on component health programs that may not be available at time of construction licence application. Furthermore, these requirements are typically refined and adjusted based on OPEX from running facilities. It is questionable whether this level of detail will be available for first-of-a-kind technology early in the construction licence application when detailed design is not yet finalized. Suggested Change: The level of effort should be commensurate with the amount of information available in this area. Many of the requirements are not required until PROL application and should be removed from this document. MAJOR Impact on Industry: Expectations for information of this kind, which is out of sequence for a potential project, would require significant resources with no corresponding improvement to nuclear safety. Any guidance in future drafts needs to provide some flexibility with regards to the level of development needed for a construction licence application. A proponent's inability to provide the requested detail at time of licence to construct application will delay licensing timeline and cause undue delay to projects.	Text has been revised to add the phrase "To the extent practicable commensurate with the stage of the project" where applicable. However, the information that is being requested is part of the initial design specifications. Reliability information is required as input into the PSA and informs the deterministic safety analysis. The extent of information needed regarding the other parts of this section is commensurate with the proposed activity. If the applicant chooses to do fuel-out commissioning under a licence to construct, they must have elements of the fitness for service program in place for chemistry control and preserving reactor materials so that there is no undue degradation.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
65.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.7, Radiation protection, 4.7.1, Radiological hazard identification and assessment and 4.7.2, Application of ALARA	The section on Radiological hazard identification and assessment, which says, "The application shall describe a nuclear criticality safety program that meets the requirements in REGDOC-2.4.3, Nuclear Criticality Safety [29]" should be in Section 4.4. Suggested Change: Criticality safety is typically covered under the Safety Analysis Safety and Control Area. In Table B.1 in Appendix B: Safety and Control Areas of draft REGDOC-1.1.2 document, Criticality Safety is listed under Safety Analysis. Thus, the sentence in Section 4.7.1 should be moved under Section 4.4 Safety Analysis of REGDOC-1.1.2.	This comment no longer applies. This section has been restructured to provide cross-references to REGDOC-2.7.1, Radiation Protection, which now includes much of the information that was listed in draft REGDOC-1.1.2 Version 2. As part of the restructuring, the reference to REGDOC-2.4.3 has been removed from section 4.7 of REGDOC-1.1.2 Version 2.
66.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	The scope of what is required to be included in the licence to construct application is not clear. Each of the following sections under Environmental Protection indicates the operation phase is to be included in scope:		Text has been revised as follows: - "The application ~~shall~~**should** provide proposed timelines and milestones for the development of provisions for environmental protection **during the construction phase. It should also include a description of any proposed environmental protection measures that would apply** during fuel-in commissioning and reactor facility operation." - Other text has been edited for clarity, to remove repetition, and to simplify the guidance. - Additional text has been added to provide clarity. - Text has been revised to clarify which items are specific to the construction phase. Applicants should note that at least partial implementation is important, especially when the reactor facility reaches fuel-out commissioning; at that point, elements of environmental protection are implemented.
		Sections 4.9.1	• Section 4.9.1: 'The application shall provide proposed timelines and milestones for development of provisions for environmental protection during fuel-in commissioning and reactor facility operation.'	
		Section 4.9.2,	• Section 4.9.2: 'The application should describe the effluent monitoring program that will be the primary indicator of reactor facility performance in terms of releases to air, surface waters, groundwater and soils, from both operation and waste management activities.'	
		Section 4.9.3,	• Section 4.9.3: 'The application should describe the environmental management system established to ensure protection of the environment throughout operation.'	
		Section 4.9.4,	• Section 4.9.4: 'The application should describe the monitoring system established to cover all environmental monitoring measures on the site during operation.'	

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
		Sections 4.9.5,	• Section 4.9.5: 'The application should identify and describe all the radiological and non-radiological aspects of site activities that could have environmental effects, including exposure to members of the public during operation.'	
			Suggested Change: Clarify the scope of requirements at the time of application for a licence to construct. Transition plans and information to demonstrate readiness for operation are reasonable requirements; however having complete programs meant for the operational phase already established at the time of application for licence to construct is not a reasonable expectation. MAJOR Impact on Industry: Misalignment in the requested detail at time of a licence to construct application will delay licensing timelines and cause undue delay to projects.	
			Feedback on CNSC Response: Licensees seek clarification on what "partial implementation" of the Environmental Protection program means.	Additional Response: No change to the document. 'Partial implementation' means the Environmental Protection program is commensurate with the activities that are being conducted. Activities likely include dealing with spills, potential conventional releases and collection of data to confirm the predictions in the ERA.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
67.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.9.4, Assessment and monitoring	Licensees seek additional clarity on the passage which reads: 'The application should also describe the provisions for monitoring the site-related parameters affected by: - seismic events, atmospheric events, and water- and groundwater-related events - demographic, industrial and transport-related developments. 'This description should be sufficiently detailed to provide the information necessary to support emergency actions in response to external events, to support a periodic review of safety at the site, and to develop dispersion modeling for radioactive material. The description should also serve as confirmation of the completeness of the set of site-specific hazards that have been taken into account.' This paragraph seems to refer to monitoring that is related to external hazards/events. This does not seem to belong in the Environmental Protection section. Is this a new requirement or is it meant to be captured under a different program? Suggested Change: Clarify the scope of requirements, and the appropriate program under which it belongs, at the time a licence to construct is applied for and what program is the appropriate place for this clause.	Text has been revised for clarity. The intent of this section is to monitor those components of the environment that would be captured under the environmental monitoring program and can be used to support emergency actions in response to external events.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Feedback on CNSC Response: Licensees seek some additional clarification on this section. The CNSC's response implies that a licensee's environmental monitoring program already captures monitoring for indications of external events or demographic/industrial/transport related developments. A licensee's environmental monitoring program, compliant with CSA N288.4, is meant to monitor radiological or conventional contaminant concentrations and/or physical stressors that are emitted by the licensed facility. What parameters are monitored in the environmental monitoring program is determined through environmental risk assessments and pathway analysis for the facility. There would not be any monitoring for external events nor demographic/industrial/transport related developers as these are not environmental impacts caused by the licensed facility. They do not belong in the licensee's environmental monitoring program.	Additional Response: Text was further revised for improved alignment with REGDOC-2.9.1, *Environmental Principles, Assessments and Protection Measures* and CSA N288.4, *Environmental monitoring programs at nuclear facilities and uranium mines and mills*. The text now states: "The application should also update the description of environmental components, where applicable, that were included in the application for a licence to prepare site to determine the environmental baseline characteristics of the site and the surrounding area."
68.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.9.5, Protection of the public and 4.9.6, Environmental risk assessment	(for section 4.9.6): Licensees seek clarity on the following, 'The application shall include an environmental risk assessment (ERA). The applicant should review the ERA that was developed under their application for a licence to prepare the site, and update the information as necessary to reflect any changes to the site or the situation.' Can it be clarified whether the reference to an ERA in this section is referring to a retrospective or a predictive ERA? Suggested Change: Clarify whether the ERA described here is intended to be a retrospective or predictive ERA.	Text has been revised to add clarity. The ERA to be reviewed will depend on the site activities during the construction phase.

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			Feedback on CNSC Response: Industry seeks further discussion on this point as a workshop item and requests the revised text be shared ahead of time so participants can offer CNSC staff a more fulsome, contextual review based on the actual changes. Licensees seek further elaboration on the criteria for determining if a prediction or retrospective ERA is required. Since the predictive ERA requires significant time to complete - and the expectation is to submit it along with the LTC application - it is important to have a clear understanding of CNSC expectations.	Additional Response: Sections 4.9.5, Protection of the public, and 4.9.6, Environmental risk assessment, have been removed. The following text is provided in Section 4.9.4 "The descriptions should be sufficiently detailed to provide the information necessary to support emergency actions in response to external events, to support a periodic review of safety at the site, and to develop dispersion modeling for radioactive material. The descriptions should also serve as confirmation of the completeness of the set of site-specific hazards that have been taken into account."
69.	Global First Power	Sections 4.10, Emergency management and fire protection and 4.10.1, General consideration s	This area also includes any results of participation in exercises. It is not clear if the CNSC expects the applicant to be engaged in and perform emergency exercises before a licence to construct is granted (such that the exercises' results be included in the licence application). If that is the case, 1) it would be difficult to imagine how such exercises would take place on a cleared site (assuming a LTPS was granted and the site is being prepared) and what the benefits would be for construction activities, and most importantly 2) the CNSC should make a reference to such requirement.	No change. This paragraph is the CNSC's definition of the emergency management and fire protection SCA, which, for the construction stage of the project, includes conventional emergencies and fires. Emergency preparedness at the site preparation stage is discussed in REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*.
70.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.10.2, Nuclear emergency preparedness and response	For clarity, licensees believe this section requires: 1. A description of any natural or artificial 'events' rather than 'hazards' 2. A revised list of bullets to align with N1600. Suggested Change: Revise the section to: 1. Require a description of any natural or artificial "hazards". 2. Include the following bullets to describe an emergency plan that aligns with those plan elements described in N1600: a) emergency response organization, including staffing, roles and	Text has been revised for clarity and to add a reference to CSA N1600:21, *General Requirements for Nuclear Emergency Management Programs*. In the specified text, CNSC staff do not find any references to "hazards". The only related reference refers to "natural or artificial events". The bullet list has been revised to address the intent of the comment as related to construction; however, some of the bullets suggested in the comment are not applicable for a construction project.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			responsibilities, and activation; b) concept of operations; c) categorization and notification; d) emergency assessment; e) protection strategy, including reference levels, generic criteria, operational intervention levels, and protective actions; f) interface with and support between response organizations; g) emergency personnel protection; h) critical facilities and support resources; i) communication and information flow; j) public alerting process; k) continuity of nuclear emergency response operations; l) process for deviation from the nuclear emergency response plan; m) supporting agreements, plans, and procedures; n) validation of the nuclear emergency response plan and procedures; and o) nuclear emergency response plan maintenance. MAJOR Impact on Industry: These amendments will clarify the scope align this document with the program requirements listed in N1600 Section 7.2.1.2 Plan Elements.	

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
71.	Bruce Power, Canadian Nuclear Laboratories (CNL), New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.10.2, Nuclear emergency preparedness and response	Per the note at the beginning of section 4.10, 'This SCA includes conventional emergency and fire response.' However, section 4.10.2 is on 'Nuclear emergency preparedness and response' and is an identical copy of the similar section from REGDOC-1.1.3 and a licence to operate. Suggested Change: Section 4.10.2 should be removed from REGDOC-1.1.2 to avoid confusion for licence applicants and other users of this REGDOC. MAJOR Impact on Industry: Unless removed, this would inappropriately affect the scope of an application.	Text has been revised for clarity that the applicant must provide information about the general emergency preparedness and response, including fire, conventional, and nuclear as appropriate.
	Global First Power		Per the note at the beginning of section 4.10, "This SCA includes conventional emergency and fire response." However, section 4.10.2 is on "Nuclear emergency preparedness and response" and is an identical copy of the similar section from REGDOC-1.1.3 (re Licence to Operate) Suggested Change: Section 4.10.2 should be removed from REGDOC- 1.1.2, otherwise will be very confusing for licence applicants and users of this REGDOC. Major Impact on industry: This draft does not appropriately recognize these are construction projects, not ongoing operations. Expectations for information of this kind, which is out of sequence for a potential project, would require significant resources with no corresponding improvement to nuclear safety.	

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72.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.10.3, Conventional emergency preparedness and response and 4.10.4, Fire emergency preparedness and response	(for section 4.10.4): Requirements in this section should be based on the FSSA/FHA of the facility design and should consider new and unique features related to fire detection/suppression. Suggested Change: Base this section on the FSSA/FHA of the facility design. MAJOR Impact on Industry: Licensees want to ensure that fire response requirements are based on FSSA/FHA for the facility design taking into consideration that robustly-designed fire detection and suppression systems can eliminate the need for a dedicated onsite industrial fire brigade.	Section 4.10.3, Conventional emergency preparedness and response, has been deleted, and Section 4.10.4, Fire protection program, has been revised to state: The application should provide a fire protection program that describes how the fire protection activities will be implemented, managed and monitored during the construction phase to ensure fire risks are minimized. Section 4.10.4, Fire protection program, is now Section 4.10.3
73.	Global First Power	Sections 4.11, Waste management and 4.11.1, General consideration s	Paragraph 3 of Section 4.11.1 requires a description of 'the overall waste program to address waste generated during day-to-day operation'; the adjective 'overall' can have two different meanings, i.e. 'general' and 'comprehensive'. Suggested Change: CNSC should clarify that general description rather than a comprehensive description is expected in this context.	Text has been revised to address the comment and focus on management of wastes produced during activities encompassed by the licence to construct
74.	Global First Power	Sections 4.11, Waste management and 4.11.1, General consideration s	Paragraph 1 of Section 4.11.1 requires the applicant to 'address management of hazardous substance wastes', i.e. not including radioactive waste recognizing that the application’s scope is construction including fuel-out (or phase A) commissioning. Paragraph 2 of Section 4.11.1 then requires the application to 'provide proposed timelines and milestones for development of provisions for waste management during fuel in commissioning and reactor facility operation.' (thus, it is limited to timelines and milestones). However, the rest of Section 4.11.1 and the entire following	Text has been revised for clarity and focus on management of wastes produced during activities encompassed by the licence to construct Sections on practices and characterization have been consolidated into Section 4.11.1

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			sections 4.11.2 through and including 4.11.4 are almost identical with the corresponding sections of REGDOC-1.1.3 (for Licence to Operate) and notwithstanding that 'overall' could mean 'general' (see above), it seems that CNSC is requiring the construction licence application to include the same scope on waste management as for the operating licence application; that is - to include also information on radioactive wastes (which contradicts the first paragraph of Section 4.11.1). Suggested Change: CNSC is requested to revise the entire sections 4.11.1 to 4.11.4 and scrub them to remove all unnecessary references to radioactive wastes and associated requirements/expectations, or limit requesting radioactive waste information only to 'timelines and milestones'. Otherwise, the entire section will remain very confusing for licence applicants and users of this REGDOC. MAJOR Impact on Industry: During construction, waste management would be limited to conventional waste. As such, this draft does not appropriately recognize these are construction projects, not ongoing operations. Expectations for information of this kind, which is out of sequence for a potential project, would require significant resources with no corresponding improvement to nuclear safety. Any guidance in future drafts needs to provide some flexibility with regards to the level of development needed for a construction licence application. A proponent's inability to provide the requested detail at time of licence to construct application will delay licensing timeline and cause undue delay to projects.	

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75.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.11.2, Waste management practices	Licensees feel the following passage is subject to interpretation: 'The application should include provisions to reduce the waste to a level that is as low as practicable.' How low is low enough? To what extent does the proponent have to minimize – at all costs regardless of the benefits? The costs of waste processing and minimization are not insignificant and the proponent must be able to balance these costs against the volume reduction achieved. Suggested Change: Amend to read, 'The application should include provisions to reduce the waste to a level that is as low as reasonably practicable.' MAJOR Impact on Industry: If left to interpretation, this could delay the licensing process and construction schedules due to a misalignment of expectations.	Refer to comment 74
76.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.11.2, Waste management practices	Licensees have several other concerns with the clarity of this section. Specifically: 1. The use of the terms 'storage', 'disposal' and 'long-term storage' in various contexts lead to some confusion. For example, the 2nd sentence of the 1st paragraph says, 'The measures taken for the safe management and disposal of these wastes throughout operation should be described.' In this case, the use of the term 'disposal' implies that throughout the operating period, final disposal (such as in a repository) must have already been considered. Yet, those disposal facilities may be several decades in the future. While of course, final disposal needs to be a consideration – it appears that what is actually meant in the context of this sentence is 'interim storage.' 2. The word 'accumulated' in the 2nd paragraph in not appropriate in this context. 3. In the 4th paragraph, the use of the word 'disposal' in this context	Refer to comment #74

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			seems to indicate that disposal (such as in a repository) needs to be consolidated for example with the new reactor's PROL. This paragraph also presumes that fuel will be transferred from wet storage to dry. What if there is a future reactor design that enables fuel transfer directly to disposal? Or what if the fuel does not need wet storage at all and goes straight to cask storage? 4. In the 5th paragraph, things like retrievability are applicable to disposal. Is that what 'longer term' is meant in this context? 5. In the 6th paragraph, some of the bulleted items appear to relate more to final disposal rather than storage. Specifically, 'multi-barrier containment approach' is typically more applicable to disposal. Similarly, 'retrievability' is applicable to disposal because by its very nature, waste in interim storage is retrievable as it still needs to be retrieved and sent to final storage. 6. The 7th paragraph says, 'The application should describe how the program takes into account the possible need to retrieve waste at some point in the future, including during the decommissioning stage.' Again, retrievability is typically applicable to disposal – so the initial reactor application must address potential future retrievability from a disposal facility, which will likely be licensed separately, most likely by a different project proponent. Suggested Changes: Amend: 1. The 2nd sentence of the 1st paragraph to read, 'The measures taken for the safe management and storage of these wastes throughout operation should be described. 2. The 2nd paragraph to read, 'The application should describe the types, quantities and volumes of radioactive and hazardous waste that will be generated.	

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			3. The 4th paragraph to read, 'Where the application includes the consolidation of the waste management facility into an operating licence, the application should describe the process for handling (including receipt, transfer and loading of waste), and storage and disposal of the solid radioactive waste and the management of spent fuel from the spent fuel bay to the dry storage facility. 4. The 5th paragraph to clarify what 'longer term' is meant in this context. 5. The bulleted list to delete 'multi-barrier containment approach' and 'retrievability.' 6. Similarly clarify the context around 'the need to retrieve waste.' MAJOR Impact on Industry: Lack of clarity could delay the licensing process and project schedules while overly prescriptive 'guidance' could stifle innovative approaches.	
77.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.11.3, Waste characterization, 4.11.4, Waste minimization and 4.11.5, Decommissioning practices	(for section 4.11.3): Not all waste types are conditioned, though this section says, 'The application should also describe the measures taken to condition the waste produced during operation, and describe the procedures for processing the waste.' Suggested Change: Amend to read, 'The application should also describe the measures taken to condition where applicable the waste produced during operation, and describe the procedures for processing the waste.'	Text for Section 4.11.4 (now Section 4.11.2) has been revised to state "The application should describe the measures that will be taken to minimize the accumulation of hazardous waste produced during construction. The application should describe the methods, such as design measures and technology, that are part of the reactor's design to minimize radioactive waste generation at the source during operation."

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
78.	Global First Power	Sections 4.13.3, Access and assistance to the IAEA, 4.13.4, Operational and design information and 4.13.5, Safeguards equipment, containment and surveillance	'The application should describe how the program ensures that the IAEA is able, upon request, to access the facility for inspections and other verification activities. Additionally, the application should describe how the program ensures that such activities are supported by facility workers and resources.' Suggested Change: Suggest that an addition of a provision to allow for IAEA remote access, would be preferable for remote sites.	Sections 4.13.3 through 4.13.5 have been removed and criteria consolidated in Section 4.13.1. However, it is noted that during the licence to construct phase, the International Atomic Energy Agency will require access to the site and facility to perform Design Information Verification, install safeguards equipment, verify nuclear material inventory (once applicable), and confirm the absence of undeclared nuclear material and activities. The installation of IAEA equipment that is remotely monitored can reduce the number of IAEA inspections. The applicant's program may ensure that the IAEA is able to perform both in-person and remote activities; however, to date, all IAEA verification activities have been in-person.
			<u>Feedback on CNSC Response:</u> Licensees still believe remote locations with in-person IAEA activities that trigger time requirements for entry would be a concern.	<u>Additional Response:</u> See above A brief discussion was held to inform workshop participants of Canada's legal obligations with regards to safeguards and the anticipated approach for establishing the safeguards measures for new facilities.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
79.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 5.3, Indigenous engagement and 5.4, Cost recovery and financial guarantees	The terminology is this section needs to be updated. Also, this section discusses Indigenous engagement in general, but provides no guidance for the applicant to address this element. REGDOC-3.2.2 is referenced, but it is not clearly listed as guidance for an application. This comment acknowledges that REGDOC-3.2.2 may provide requirements and/or guidance for a licensee (as noted by the REGDOC), if REGDOC-3.2.2 is cited in a licence or LCH. However, this statement of fact has no direct relevance to the requirements or guidance for an application. Suggested Changes: Revise to ensure proper terminology such as 'Aboriginal' or 'treaty' rights vs. 'Indigenous treaty rights.' For consistency, the phrase meaningful consultation with 'Indigenous groups' should be expressed as '… Indigenous peoples and communities.' Also revise the section, to provide guidance for the applicant, or remove it altogether. The revision should make clear that there is no statutory requirement for REGDOC-3.2.2 to apply to an Indigenous engagement program, nor to an application for a licence. MAJOR Impact on Industry: Although REGDOC 3.2.2 is entitled Indigenous Engagement, when referring to rights under Section 35 of the 1982 Constitution Act, it should be rendered as Aboriginal and treaty rights in this particular instance.	Text has been revised for clarity. The text now states that: "**The applicant shall describe how their Indigenous engagement plan and activities meet the requirements in** REGDOC-3.2.2, *Indigenous Engagement* [56], **which clarifies** requirements and **provides** guidance for **applicants** whose proposed projects may raise the Crown's duty to consult." and "The information collected, and measures proposed, by **applicants** to avoid, mitigate or offset adverse effects **on Indigenous or treaty rights** may be used by the CNSC in meeting the CNSC's obligations for consultation. As described in REGDOC-3.2.2, *Indigenous Engagement*, applicants must demonstrate that they have initiated and carried out an appropriate level and amount of engagement with Indigenous peoples who may be affected by the proposed activity or facility. This engagement by the applicant will have started before the Commission would issue a licence to prepare the site, and should be demonstrated to have progressed further before the Commission would issue a licence to construct. REGDOC-3.2.2 sets out clear requirements for applicants on what information is to be reported to CNSC staff with regards to Indigenous engagement when an application is submitted, as well as the reporting requirements throughout the regulatory process up until a Commission decision. The *Constitution Act, 1982* refers to Aboriginal and treaty rights, but the CNSC follows current federal government of Canada policy of using the terminology of "Indigenous peoples". The CNSC's approach in its internal and external documentation is to use Aboriginal in any technical legal sense, but to use Indigenous in place of Aboriginal in all other instances, including when referring to Indigenous (Aboriginal) rights and the duty to consult and where appropriate accommodate Indigenous peoples. The CNSC has verified that the current version of REGDOC-1.1.2 is using consistent language with regards to Indigenous and treaty rights throughout the document.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
80.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Appendix A: Legislative Clauses	Appendix A maps clauses of the NSCA and associated regulations to the various sections of the REGDOC. However, these clauses may or may not refer to licence applications, but generally refer to obligations of licensees. Nuclear Security Regulations: Appendix A cites "all" and Clause 3(b). The REGDOC should cite Clause 3 and Clause 4 directly. Nuclear Substances and Radiation Devices Regulations: Appendix A cites clause 5. However, Clause 5 does not refer to requirements. In fact, Clause 5 specifically exempts certain activities from a licence. Appendix A should be revised to more clearly focus solely on requirements that apply to an application for a licence to construct a nuclear facility. Suggested Change: Revise Appendix A to remove clauses that do not apply directly to an application for a licence to construct a nuclear facility.	Text in appendix A has been reviewed and revised where appropriate. No change to the reference to section 5 of the *Nuclear Substances and Radiation Devices Regulations*. This section provides general exempted activities and the concepts of exemption quantity, conditional clearance and unconditional clearance. These are particularly relevant to radiation protection in, as examples, disposal of wastes, determining free release criteria for the clearance of items from the site of the licensed activity, and the clearance of persons from the site of the licensed activity. This section can also be linked to the radiation protection program requirements stipulated by 4(a)(iii) and 4(b) of the *Radiation Protection Regulations*.

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81.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Appendix A: Legislative Clauses	Several paragraphs from the Class I NFR have not been fully addressed in the draft REGDOC. The schedule for construction is required to be provided, pursuant to the Class I NFR, Section 5(c), but has not specifically been addressed in the REGDOC. The proposed quality assurance program is required to be provided, pursuant to the Class I NFR, Section 5(g), but has not specifically been addressed in the REGDOC. (Section 4.1.2 does provide guidance to address N286, but does not explicitly provide a requirement to identify the quality assurance program, which may or may not be N286.) At various locations, the draft REGDOC mentions monitoring and controlling releases, but at no point does the REGDOC specifically address the requirement from the Class I NFR, Section 5(j), including point of release, maximum quantities and concentrations, volumes, flow rates, and characteristics. Section 4.2.3 provides guidance to provide the program and schedule for recruiting, training, and qualifying workers. However, Class I NFR, Section 5(l), requires this information. Suggested Change: Revise the REGDOC to more precisely align with the exact requirements of the Class I Nuclear Facilities Regulations, Section 5. However, "shall" statements should not also include guidance or expectation that goes beyond the specific requirements of the Class I Nuclear Facilities Regulations. MAJOR Impact on Industry: Misalignment between requirements, guidance and expectations; artificially raises the profile of guidance to equate to requirement per regulation – unnecessary regulatory burden.	Text in appendix A has been reviewed and revised where appropriate. The CNSC's regulatory framework allows for cross-references where appropriate between regulatory documents. For example, REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs*, addresses regulation 5(c), and provides criteria regarding construction planning and scheduling. REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures*, addresses monitoring and controlling releases. This licence application guide, REGDOC-1.1.2 Version 2, points to those regulatory documents as the main sources, and therefore the CNSC is of the opinion that the regulations are adequately referenced.

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82.	Global First Power	Appendix C: Review Objectives for an Application for a Licence to Construct a Reactor Facility	(in section C.3): "meeting the design safety objective means satisfying the relevant expectations outlined in: … REGDOC 1.1.1, Site Evaluation and Site Preparation for New Reactor Facilities…" It is not clear why REGDOC-1.1.1 is mentioned here for meeting the design safety objectives for a Licence to Construct. The expectations from REGDOC-1.1.1 would have already been assessed by the CNSC staff during the review of the Licence to Prepare Site application and may have been already reflected in the granted licence to prepare site. Is the CNSC staff assuming that an applicant/licensee may apply for a Licence to Construct before a Site Licence is granted?	Text has been revised to remove the reference to REGDOC-1.1.1, *Site Evaluation and Site Preparation for a New Reactor Facility*. The CNSC is not assuming that the applicant may apply for a licence to construct before the licence to prepare site is granted, but it may happen. Or, an applicant may submit a joint "application for a licence to prepare site AND construct".
83.	Global First Power	Appendix C: Review Objectives for an Application for a Licence to Construct a Reactor Facility	(in section C.3): "At an intermediate level, the expectations of REGDOC 2.5.2 [9] may be grouped in several main categories, which can be thought of as the third-level objectives." It is not clear what is meant by this statement in general, and by "an intermediate level" in particular." Suggested Change: CNSC is requested to clarify the meaning of "intermediate level" in this context.	Text has been revised to replace the paragraph with the following text: "Each of the second-level objectives can be sub-divided into third level objectives, which have more specific means of assessment. In reviewing an application for a licence to construct a reactor facility, CNSC staff will assess whether the objectives are met for the applicable topical areas."

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
84.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Appendix D: Sample Format for Listing the Supporting Documentation	The REGDOC states that the 'applicant will have already provided supporting documentation in an application for a licence for site preparation.' This is not strictly accurate, as an applicant could apply for a licence to prepare a site and construct a facility at the same time, as noted in Section 2.1." Suggested Change: Change the text to: 'If the applicant has previously applied for a licence to prepare a site, then some of the supporting documentation may already have been provided.' MAJOR Impact on Industry: The change will help clarify requirements for some applicants who may wish to apply for multiple related activities at the same time."	Text has been revised for clarity, as follows: "the applicant ~~will~~ **may** have already provided …".
85.	Bruce Power, Canadian Nuclear Laboratories (CNL), New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Glossary	Definition of Intelligent Customer: The REGDOC states that "As an intelligent customer, in the context of nuclear safety, the organization should … supervise the work and should technically review the output before, during and after the work". There is oversight of contracted work rather than supervision, and the output is reviewed and accepted to ensure that it meets the intended purpose. This also aligns with CSA N286-12. Suggested Change: Change the text to : "As an intelligent customer, in the context of nuclear safety, the organization should… oversee the work and should review and accept the output to ensure that it meets the intended purpose." Major Impact on Industry: Implementation would cause misalignment with CSA N286, REGDOC-2.1.1 and current industry practices.	The definition has been revised to: **informed customer** *(client informé)* A concept that describes an organization with the capability (expertise and proficiency) to ensure effective management, control, and oversight of nuclear safety (such as health, safety, protection of the environment, safeguards and security), including work carried out on its behalf by contractors. Such organizations have a clear understanding and knowledge of each product or service being supplied, specify the requirements for those products and services, oversee the work carried out on its behalf by contractors and technically review the output before, during and after the work.

Table C: Theme: Applicants must have the option of applying a graded approach or alternative methods; this draft is not clear on whether or how that is permitted
(this table consolidates all specific comments received that have been consolidated into comment #3 in table B, above)

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
i.	Bruce Power	General	As Canada looks to emerging technologies, such as Small Modular Reactors (SMR), to meet its future energy and environmental challenges, there is a pressing need for a contextual, up-to-date licence application guide to construct reactor facilities of all types. As currently written, this draft REGDOC does not meet that need. Rather than guide potential new proponents on how to apply for a construction licence, this document contains a level of detail and requirements more in keeping with the scale of existing Canadian nuclear power plants. Too often, this early draft refers to requirements under Safety and Control Areas that would not apply to the construction phase, but would be addressed in subsequent applications such as license renewals, or licences to operate. Suggested Change: Given the importance of an application guide for all reactor types, licensees strongly urge the CNSC to conduct a workshop with all interested stakeholders to better understand applicants' needs and align this early draft with information in REGDOC-1.1.5., Supplemental Information for Small Modular Reactor Proponents. MAJOR Impact on Industry: Many SMR designs have enhanced safety features in addition to those of traditional reactor designs. Consequently, their risk profile is even further reduced. Regulatory requirements stipulated for such advanced reactor designs need to take these enhancements into consideration. Unless that difference is reflected in an application guide, Canada's ability to encourage new reactor proponents and attract necessary financial investment will be inappropriately impacted. This document appears to have been written exclusively	Text has been revised throughout REGDOC-1.1.2 Version 2 to clarify and enhance the CNSC's regulatory approach regarding small reactors, innovative approaches and novel technologies. For example, the following text has been added to many clauses: "To the extent practicable commensurate with the stage of the project" The CNSC has a risk-informed regulatory framework that allows for flexibility and fosters innovation while ensuring that nuclear safety is maintained. REGDOC-3.5.3, *Regulatory Fundamentals*, is being updated to provide additional information on applying a graded approach. The regulatory framework also includes guidance, which is used to inform the applicant on how to meet requirements, elaborate further on requirements, or provide best practices. While the CNSC sets requirements and provides guidance on how to meet requirements, an applicant may put forward a case to demonstrate that the intent of a requirement is addressed by other means. Such a case must be demonstrated with supportable evidence. REGDOC-1.1.5, *Supplemental Information for Small Modular Reactor Proponents*, provides additional information about a flexible approach for SMRs. Proponents and applicants of innovative approaches and novel technologies must provide an evidence-based description of how they intend to meet the safety requirements. CNSC requirements allow applicants to put forward a case to demonstrate that the intent of a requirement is addressed by other means and demonstrated with supportable evidence.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			for current designs and construction by large utilities; though it's unlikely it will be used for this purpose in the foreseeable future. Will there be another licence to construct for SMRs, or is this exclusive to all makes of nuclear models? Future drafts would benefit from additional insights on possible "mass production" of SMRs from a single site and the site preparation aspect by another organization. A flexible approach is not currently evident in this initial draft REGDOC."	
ii.	Bruce Power	Overall regulatory document	Unlike other recently-issued REGDOCs, the use of a "risk-informed graded approach" is barely mentioned in this draft. Though referenced in REGDOC-1.1.5, the concept of a risk-informed graded approach is particularly important for emerging technologies such as SMRs and should be more explicitly stated at the beginning of this REGDOC. Suggested Change: Align future drafts of this document with all current REGDOCs to include wording around "risk-informed graded approach." Provide context early in the text as to why this approach is important given the difference in risk profiles for SMRs. MAJOR Industry Impact: Similar to comment #1, an inability to apply concepts/requirements outlined in this REGDOC in a risk informed graded approach will likely preclude small/micro SMRs from being deployed by proponents other than existing large nuclear utilities. This will, in effect, stop any potential SMR deployment, particularly at the smaller end of the spectrum and put Canada's ability to capitalize on first-mover advantage at risk as outlined in the SMR Roadmap.	Text has been revised throughout the document to clarify and enhance the CNSC's regulatory approach regarding small reactors, innovative approaches and novel technologies. For more information, see response to comment i), above. Most regulatory documents, including REGDOC-1.1.2 Version 2, include the following statement: For information on the implementation of regulatory documents and on the graded approach, see REGDOC-3.5.3, *Regulatory Fundamentals*. REGDOC-3.5.3, *Regulatory Fundamentals*, provides an explanation of the graded approach. At the request of stakeholders, REGDOC-3.5.3 is in the process of being revised to add more explanation and guidance of how applicants may apply the graded approach to activities and facilities with differences in risk profiles. The CNSC has a risk-informed regulatory framework that allows for flexibility and fosters innovation while ensuring that nuclear safety is maintained.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
iii.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 2.3, Licensing process and Section 2.5, Completing the licence application	The regulatory framework should not restrict innovation. Specifically, innovative new nuclear technologies may not meet the proscriptive requirements in the REGDOC framework (for example, but not limited to, REGDOC-2.5.2). This is, of course, an area of ongoing discussion with the CNSC, but the licence application guide should make it clear that existing REGDOCs do not necessarily reflect requirements in all cases. If this is not made clear (or, if the CNSC does not agree with this interpretation of how to apply the regulatory framework), then the overall framework may provide a barrier to innovation, which may be of detriment to Canada. This identical comment was submitted for sections 2.3 and 2.5.	Text has been revised; see responses to comments i) and ii), above. The following text has been added to the preface and Section 1.2: "Given the wide range of reactor facilities – especially of advanced and small modular reactors (SMRs) – and given that reactor facilities have risk profiles that vary significantly, depending on the particular characteristics of the activity or facility, the applicant or licensee can apply a risk-informed approach that includes grading and alternatives in the development of their application, in accordance with REGDOC 1.1.5, *Supplemental Information for Small Modular Reactor Proponents* [1], and REGDOC 3.5.3, *Regulatory Fundamentals* [2]."
iv.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.3, Organization	Licensees have a series of significant concerns and requests for clarity with the sub-section on Organization. Once again, this draft document is seeking information that is either overly broad, not available in the construction phase, speculative or geared toward existing, large-scale organizations. Suggested Change: CNSC staff is urged to revisit this entire section to ensure it seeks information that is applicable to all potential applicants and available at the time of a licence to construct application. MAJOR Impact on Industry: This document appears to have been written exclusively for current CANDU designs and construction by large utilities. Will there be another licence to construct for SMRs, or is this exclusive to all makes of nuclear models? This lack of clarity could weaken Canada's ability to capitalize on first-mover advantage as outlined in the SMR Roadmap.	No change to text in response to this comment. This section is deliberately broad to give applicants the flexibility for their organizational arrangements, including their contractors and subcontractors. Ultimately, the applicant is responsible for oversight of their supply chain for goods and services. All applicants are expected to understand the management system programs, processes and procedures that have been or will be put in place to protect health, safety and the environment, and a description of the organizational management structure, the management system programs, processes and procedures that have been or will be put in place to protect health, safety and the environment, and a description of the organizational management structure

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Feedback on CNSC Response: Licensees seek further discussion on this as a workshop item. Clarity is sought on what applicants are responsible to do themselves and what they are expected to submit as part of a licence to construct application.	Additional Response: Text has been revised to provide clarity. Discussions regarding previous comments were deemed to have addressed this concern.

Table D: Theme: What is the regulatory basis for the CNSC's requirements on specific items?
(this table consolidates all specific comments received that have been consolidated into comment #4 in table B, above)
(Note that comments in this table may include comments included in table E, because some individual comments include information relevant to both themes)

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
a.	Bruce Power	Submit comments on the overall regulatory document	The draft REGDOC mixes requirements ("shall" statements) that have a basis under the NSCA with expectations ("should" statements) that have no basis under the NSCA. For example, the draft REGDOC states "the applicant shall describe how their proposed public information and disclosure program… meets the requirements in REGDOC-3.2.1." While submission of a proposed public information and disclosure program is indeed a statutory requirement (a "shall" statement is appropriate), the requirement to meet REGDOC-3.2.1 is not a statutory requirement. In other words, this sentence has mixed statutory requirements with general expectations. Accordingly, all statements that mix requirements ("shall") with expectations ("should") must be rewritten to clearly delineate requirements from expectations. Suggested Change: Review and revise the REGDOC to eliminate "shall" statements that are not fully aligned with the statutory requirements under the NSCA. Where those statements go beyond the requirements of the	Text has been revised throughout the document, where applicable to this comment or to other specific comments. However, there is no change for the specific example used (REGDOC-3.2.1); see explanation below. REGDOC-3.5.3, *Regulatory Fundamentals*, describes the flexibility that exists in how applicants may address the regulatory framework: "While the CNSC sets requirements and provides guidance on how to meet requirements, an applicant or a licensee may put forward a case to demonstrate that the intent of a requirement is addressed by other means. Such a case must be demonstrated with supportable evidence." This regulatory document includes select requirements that are based on the NSCA and the regulations made under the NSCA. Other requirements are related to documents that clarify requirements that must be addressed and will be incorporated into the licensing basis. The content of this licence application guide provides context on how to meet the requirements of the NSCA and the regulations. Appendix A provides a list of clauses in the NSCA and the regulations, mapped to the relevant sections of this licence application guide.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			NSCA, they should be rewritten as guidance, not requirements. Specific examples of these statements are identified in [other comments]. MAJOR Impact on Industry: In order for the overall regulatory framework to not unduly burden business decisions, it is absolutely critical to clearly distinguish statutory requirements ("shall" statements) from general expectations ("should" statements). In an extreme example, if the licence application guide indicates that the application "shall" comply with a specific REGDOC, but the applicant proposes to use new technology that cannot meet all the requirements of that REGDOC, then an applicant may make a business decision not to proceed with the entire project.	The regulatory framework also provides guidance, which is used to inform the applicant or licensee on how to meet requirements, to elaborate further on the requirements, or to provide examples of best practices. While the CNSC sets requirements and provides guidance on how to meet them, an applicant or licensee may put forward a case to demonstrate that the intent of a requirement is addressed by other means. Such a case must be demonstrated with supportable evidence. REGDOC-3.2.1, *Public Information and Disclosure*, clarifies CNSC requirements and provides guidance for public information and disclosure programs. A public information and disclosure program is specifically addressed by section 3(j) of the *Class I Nuclear Facilities Regulations*: "3. An application for a licence in respect of a Class I nuclear facility, other than a licence to abandon, shall contain the following information in addition to the information required by section 3 of the *General Nuclear Safety and Control Regulations*: "(j) the proposed program to inform persons living in the vicinity of the site of the general nature and characteristics of the anticipated effects on the environment and the health and safety of persons that may result from the activity to be licensed;" From a practical perspective, a licence application will not be approved without a public information and disclosure program; hence, the word "shall" is used.
b.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 2.5, Completing the licence application	Licensees have significant concerns with the following passages: 1. The REGDOC says the applicant "shall" submit improvement plans and "shall" identify standards to be met. Additionally, it says the applicant "shall" provide a performance assessment. The mandatory "shall" does not have a statutory basis. Unless REGDOC-1.1.2 is cited in a licence, the "shall" has no weight in this context 2. More importantly, improvement plans and performance assessments do not belong in a licence to construct. These are more appropriate during licence renewals, or licences to operate. The REGDOC is asking for information that would not exist for first constructors3. The need to cite 'other' codes and standards as per the 1st sentence of the 2nd paragraph should be clarified. Codes and standards are not regulatory documents, per se.	The text pertaining to licence renewal has been removed . See also response to table B, comment 12.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Suggested Change: CNSC staff is urged to: 1. Either remove the references to improvement plans and performance assessments or note that, in the case of a licence renewal, 'the applicant should submit improvement plans' and where changes are planned, 'the applicant should identify the standard to be met.' 2. Correct Section 2.5 to note that, in the case of a licence renewal, 'the applicant should provide a statement of performance assessment where warranted.' 3. Amend the 1st sentence of the 2nd paragraph to read, 'The application should cite CNSC regulatory documents, and other codes and standards that will govern program objectives that demonstrate the applicant's ability to implement the safety and control measures.' MAJOR Impact on Industry: It is important to maintain a clear distinction between requirements and guidance in all aspects of the regulatory framework. By citing items like improvement plans and performance assessments, this draft does not seem to recognize these are construction projects not ongoing operations. First-time constructors cannot be required to submit information that will not exist. A requirement to submit an improvement plan, if not warranted, will result in unnecessary project work.	
c.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and	Sections 3.2.3, Description of site, 3.2.4, Description of the facility's	The REGDOC says the application "shall" contain a site plan that includes a description of various security-related elements. Having reviewed GNSCR, Section 3, Class I NFR, Section 3, and the NSR, Section 3, licensees do not see statutory requirements for describing the unobstructed areas, barriers enclosing inner areas, inner areas, and/or vital areas. Therefore, this information is not mandatory as per the NSCA.	Material derived from the Nuclear Security Regulations has been removed. REGDOC-3.5.3, *Regulatory Fundamentals*, describes the flexibility that exists in how applicants may address the regulatory framework: "While the CNSC sets requirements and provides guidance on how to meet requirements, an applicant or a licensee may put forward a case to demonstrate that the intent of a requirement is addressed by other means. Such a case must be demonstrated with supportable evidence."

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
	Ontario Power Generation (OPG)	existing licensing status and 3.2.5, Nuclear and hazardous substances	Note that this comment fully agrees that the application "shall" contain a site plan. The intent of this comment is to note that the REGDOC cannot and should not create requirements for the content of the site plan, beyond any requirement specified in the NSCA. Accordingly, this statement must be revised to reflect guidance, not requirement. Also, was it the CNSC's expectation that all of these elements be required for SMRs with no provision for a risk-informed graded approach? Suggested Change: Amend Section 3.2.3 to note that the site plan should contain a description of the unobstructed areas, inner areas, and/or vital areas and consider a graded approach to these requirements for SMRs based on risk. MAJOR Impact on Industry: An inability to apply concepts/requirements outlined in this REGDOC in a risk-informed graded approach will likely preclude small/micro SMRs from being deployed by proponents other than existing large nuclear utilities. This will, in effect, stop any potential SMR deployment, particularly at the smaller end of the spectrum and put Canada's ability to capitalize on first-mover advantage at risk as outlined in the SMR Roadmap.	These requirements come from: *Class I Nuclear Facilities Regulations*, paragraphs 3(a), (b): 3. An application for a licence in respect of a Class I nuclear facility, other than a licence to abandon, shall contain the following information in addition to the information required by section 3 of the General Nuclear Safety and Control Regulations: (a) a description of the site of the activity to be licensed, including the location of any exclusion zone and any structures within that zone; (b) plans showing the location, perimeter, areas, structures and systems of the nuclear facility;
d.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.0, Safety Policies, Programs, Processes, Procedures and Other Safety and Control Measures	The introductory paragraphs are unclear. If read literally, the introductory paragraphs express requirements that are not statutory requirements and should not be included in this REGDOC. The two initial sentences make three separate statements, which are unclear at best. Specifically: 1. "The applicant's safety policies [etc] shall address all relevant sections in the NSCA…" On the surface, this appears to state that the applicant shall follow	1. While it may be technically redundant, in this case it reminds other stakeholders (for example, the Canadian public) that the applicant must, indeed, follow the law. 2. This text provides an introduction and a context. Text has been revised for clarity, to state: "This licence application guide is organized according to the CNSC's SCA framework. However, the applicant may choose to organize the information in any structure. For more information on structuring a licence application and organizing the information, see section 2.4." 3. The text "other matters of regulatory interest" has been removed.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			the law. It may be that this statement is intended to mean that the application shall address all relevant sections of the NSCA. As this is the purpose of the licence application guide, such a statement is redundant at best. 2. "[The applicant's safety policies, etc.] shall also address the CNSC's safety and control areas." On the surface, this appears to state that the applicant's management system should address the CNSC's regulatory framework. Other than meeting legal requirements, it is not clear how to do so. Should the management system be structured to align with the CNSC's regulatory framework? Such a requirement would be unduly burdensome. Instead, it is assumed that this statement is intended to mean that the application shall address all CNSC safety and control areas. However, no such requirement exists under the NSCA, and the application guide is intended to provide that structure (as a guide, not a requirement). This statement is redundant at best. 3. "The applicant's policies, programs, [etc] shall also address other matters of regulatory interest." On the surface, this appears to state that the applicant's management system should address the CNSC's regulatory framework. Other than meeting legal requirements, it is not clear how to do so. Should the management system be structured to align with the CNSC's regulatory framework? Such a requirement ("shall") would be unduly burdensome. Instead, it is assumed that this statement is intended to mean that the application shall address other matters of regulatory interest. However, no such requirement exists under the NSCA, and the application guide is intended to provide that structure (as a guide, not a requirement). This statement is redundant at best. Suggested Change: Remove introductory paragraphs) to Section 4 or revise to clarify	

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			their intent.	
e.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.3, Organization	The REGDOC says an applicant 'shall ensure that, as a contractual obligation, the applicant and the CNSC will have right of access to the premises of any supplier to the construction program.' This requirement ("shall") is not based on the statutory requirements of the NSCA, and is not relevant to the application. This REGDOC should not—indeed, barring a specific licence condition, cannot— create requirements. There are appropriate times for the future licensee to visit supplier premises. However, this comment is intended to note that such visits are not appropriate for all suppliers. If taken literally, this requirement is unduly burdensome to the future licensee and may interfere with contractual relationships. The requirement for the CNSC to have right of access must be explained further. This comment has already noted that the REGDOC cannot create requirements. Taken literally, this new requirement envisions CNSC access to a wide variety of commercial suppliers, but does not provide context or limitations to the scope of that access. Under the NSCA, CNSC inspectors have wide authority and latitude to conduct inspections related to the mandate of the NSCA. If the proposed site visits fall within the mandate of the NSCA, such contractual obligations would not be necessary. If the proposed site visits do not fall within the mandate of the NSCA, such contractual obligations are not appropriate. Also, the CNSC has no legal mandate outside Canada. Therefore, should a supplier be located outside Canada's border, this requirement cannot be enforceable. Suggested Change: Remove this statement or change 'shall' to 'should'. MAJOR Impact on Industry: This is an overly broad, unnecessary, and burdensome requirement.	Right of access will be part of the licence conditions handbook (LCH) for a licenced reactor facility, and will be used by the CNSC for verification purposes when necessary. Regarding "the CNSC has no legal mandate outside Canada": If components or structures are being used in Canada, once they are in the country and are designed to be used in a Canadian nuclear facility on Canadian soil, they fall under the CNSC's legal mandate. In other words, any item that will be used in Canada must meet Canadian legal requirements.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			As the REGDOC should not, and cannot, create requirements, the statement must at minimum be clarified to reflect guidance, not requirement.	
			<u>Feedback on CNSC Response:</u> Industry seeks further discussion on this as a workshop item. The disposition correctly says that once components enter Canada they fall under the CNSC's mandate. However, the CNSC cannot impose inspection and right-of-access requirements in contractual language outside Canadian borders. Furthermore, insistence of this requirement can reduce the potential list of suppliers and therefore reduce competition and ultimately drive up costs for licensees. This text should be for information in the REGDOC, not a requirement.	<u>Additional Response:</u> For clarity, the first paragraph of section 4.1.3, 'Oversight of contracted work', was replaced with text that references REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs*.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
f.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.2.2, Human performance program and 4.2.3, Personnel training	The REGDOC states that the applicant 'shall describe a training system that is in accordance with REGDOC-2.2.2.' There is no statutory requirement to comply with REGDOC-2.2.2. Accordingly, this statement should reflect guidance, not requirement. This section also suggests, 'The applicant should describe the qualification and training requirements for personnel engaged in the design activities, and the proposed program and schedule for recruiting, training and qualifying workers for work relating to construction, commissioning, operation and maintenance.' This is not applicable to the licence to construct phase." Suggested Change: Remove the statement. Otherwise, revise Section 4.2.3 to say, 'the application should describe a training system that is in accordance with REGDOC- 2.2.2' or clarify that the requirement is to describe 'the proposed program and schedule for recruiting, training and qualifying workers in respect of the operation and maintenance of the nuclear facility' and that compliance with REGDOC-2.2.2 may be used to partially meet that requirement." MAJOR Impact on Industry: This is not appropriate for this phase of a potential project, but more applicable for an operating licence.	No change to the "shall" statement. If the Commission issues a licence to construct a reactor facility, then REGDOC-2.2.2, *Personnel Training*, will be part of the licensing basis. Therefore, the applicant must provide sufficient information in their licence application to ensure that they will meet the requirements of REGDOC-2.2.2. For a response to the comment that this requirement is more applicable for an operating licence, please see table B, comments 2 and 5 in this document.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Feedback on CNSC Response: Industry seeks further discussion on this as a workshop item. CNSC and industry continue to have opposing views on this topic. The description of a program for training and qualification for commissioning, operation and maintenance should be allowed to be provided at a later milestone, as they are not required at the time of LTC issuance. When a REGDOC is included as licensing basis, it becomes a challenge to present a unique approach that does not meet it entirely. It becomes the subject to continuous debate and interpretation.	Additional Response: The first paragraph of section 4.2.2 was revised for clarity, as follows: "The application shall describe a training system that is in accordance with REGDOC 2.2.2, *Personnel Training* [14]."
g.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.2.4, Personnel certification	The REGDOC states 'for positions requiring certification as set out in REGDOC-2.2.3, Volume III … the application shall include details …' However, neither REGDOC-1.1.2 nor REGDOC-2.2.3 Volume III can create requirements. There is no statutory requirement for persons to be certified as per REGDOC-2.2.3 Volume III. (This comment acknowledges the statutory authority of the Commission to impose certification requirements, but notes that authority is not necessarily linked directly to REGDOC-2.2.3 Volume III.) The applicant is, and should be, free to propose approaches that are not fully in alignment with REGDOC-2.2.3, particularly for novel reactor designs such as SMRs. For example, a requirement for oneyear plant experience cannot be demonstrated for a new design. In addition, details of operator certification may not be available at time of licence application, particularly for large projects which could take multiple years for construction. It is unclear what level of detail is being requested at this stage of a project.	No change to the "shall" statement. If the Commission issues a licence to construct a reactor facility, then REGDOC-2.2.3, Volume III, *Certification of Persons Working at Nuclear Power Plants*, will be part of the licensing basis. Therefore, the applicant must provide sufficient information in their licence application to ensure that they will meet the requirements of REGDOC-2.2.3, Volume III. Applicants are free to propose approaches that are not fully in alignment with REGDOC-2.2.3, Volume III. The CNSC accepts licence applications that address the safety objectives in a risk-informed graded approach. Text has been added to REGDOC-1.1.2 Version 2 to clarify this approach, and REGDOC-3.5.3, *Regulatory Fundamentals*, will be revised to provide additional information.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Suggested Change: Revise Section 4.2.4 to say, 'for positions requiring certification as set out in REGDOC-2.2.3, Volume III … the application should include details …' It should also include guidance or the use of graded approach on how REGDOC-2.2.3, Volume III is applicable to other reactor designs. MAJOR Impact on Industry: The regulatory requirements should be technology neutral and be able to account of personnel certification requirements for SMR design and operation. Inability to provide requested detail at the time of a licence to construct application will delay licensing timelines and cause undue delay to projects.	

			<u>Feedback on CNSC Response:</u>
			
			Industry seeks further discussion on this as a workshop item as per the previous comment.
			
			The CNSC disposition is justifying the status quo, but a new approach is needed for advanced reactors. This REGDOC imposes requirements which do not make sense for an SMR and, in some cases, cannot be met.
				<u>Additional Response:</u>
				
				Text, now included as Section 4.2.3, states:
				
				"In preparation for the authorization or certification of personnel employed in designated positions, the applicant should provide:
				• a reference to or summary of the proposed management system and the concept of operation as they pertain to:
				  ◦ the roles and responsibilities of the personnel employed as part of the minimum shift complement
				  ◦ the roles and responsibilities of the personnel employed in positions immediately relevant to safety including, but not limited to, safety-sensitive and safety-critical positions
				  ◦ the extent of human intervention in operations under normal, abnormal, and emergency conditions, including the potential impact of human actions and decisions on the safety of workers, the public, and the environment
				• an overview of any proposed simulator facility or system and the manner in which this simulator facility or system will be used to support personnel training
				• an overview, and an overview of the schedule for implementation, of the programs relevant to the selection, training and qualification of reactor operators and, where

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
				applicable, control room shift supervisors." Workshop participants posed questions around hypothetical Nth of a kind facilities. CNSC staff noted that such a safety case (no need for operator input to deal with non-normal conditions) has not yet been submitted, demonstrated or supported with data and as such is best left to when that particular case has been made. Ultimately, applicant / licensee staff need to be adequately trained for their duties.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
h.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.2.5, Initial certification examinations and requalification tests	The REGDOC states 'the application shall describe an examination program … in accordance with REGDOC-2.2.3 Volume III …' and 'the application shall address the CNSC examination guides EG1 … and EG2…' There is no statutory requirement for the examination program to comply with REGDOC-2.2., Volume III, EG1, and/or EG2. Accordingly, these statements should be removed to reflect guidance, not requirements. Also, these three CNSC documents are CANDU specific: • EG1, Requirements and Guidelines for Written and Oral Certification Examinations for Shift Personnel • EG2, Requirements and Guidance for Simulator-based Certification Examinations for Shift Personnel at NPPs • Requirements for the Requalification Testing of Certified Shift Personnel at Nuclear Power Plants, revision 2. Suggested Change: Remove this section. MAJOR Impact on Industry: The regulatory requirements should be technology neutral. Also, this draft does recognize these are construction projects. This creates a large overlap of requirements (redundant) between Construction & Operating licences. As presently written, draft REGDOC-1.1.2 is nearly identical to REGDOC-1.1.3, Licence Application Guide: Licence to Operate a Nuclear Power Plant.	Text has been revised to clarify that: - The certification examination and requalification testing program should be described at a high level; applicants should be considering how to support workers certification early, as the certification timeline is a long one - the three CNSC documents are provided as information and examples of information that has been used to develop successful certification examination and requalification testing programs for existing facilities, and should be used as information for developing personnel certification and requalification programs for other technologies (note that these documents can be applied in a risk-informed approach that includes grading and alternatives) Applicants are free to propose approaches that describe how the proposed certification programs for their advanced, novel or innovative technology meets the safety objectives.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Feedback on CNSC Response: Industry seeks further discussion on this as a workshop item as per the previous comment. It should be clearly stated that the three CNSC documents are included for information and not to set requirements. Again, why not take the opportunity to review and revise REGDOC-2.2.3 or develop a Certification document for SMRs rather than have licensees apply risk-informed graded approach for a different technology that was developed for a CANDU design?	Additional Response: Section 4.2.5 has been removed Discussions regarding previous comments were deemed to have addressed this concern.
i.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.3, Operating Performance and 4.3.1, General considerations	The REGDOC states 'the application shall include information on how the nuclear facility will adhere to any applicable provincial legislation or other applicable codes and standards.' There is no statutory requirement to provide this information with an application to construct a nuclear facility. Additionally, the statement is far too broad. Extensive provincial legislation applies to activities required to construct a nuclear facility. While some of that provincial legislation could hypothetically fall within the mandate of the NSCA, much of it would not. Instead, if the CNSC has general expectations for the application of a licence to construct, those expectations should be made explicit. Suggested Change: Remove the statement. MAJOR Impact on Industry: This statement goes well beyond the mandate of the NSCA and includes items of provincial authority. Should the CNSC have general expectations relating a licence application, those expectations can and should be listed in the licence application guide.	No change to text. Before a licence is issued, the CNSC must ensure that all applicable provincial legislation or other applicable codes and standards have been met.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Feedback on CNSC Response: Licensees believe this statement is too general. It's not clear how an applicant would show adherence to provincial legislation aside from listing them along with other codes and standards. Which ones would be applicable?	Additional Response: Text has been removed.
j.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.4, Safety analysis and 4.4.1, General considerations	The REGDOC states that the 'PSAR includes a deterministic safety analysis, a probabilistic safety assessment (PSA) and a hazards analysis.' As written, it is not clear if this is requirement or guidance. As there is no statutory requirement to provide any of these three elements, the sentence must reflect guidance as to the content of the PSAR. This sentence should be revised to use the word 'should.' Suggested Change: Revise Section 4.4.1 to state 'the PSAR should include a deterministic safety analysis, a probabilistic safety assessment (PSA) and a hazards analysis.'	Text has been revised, as follows: "The application shall include a preliminary safety analysis report (PSAR) for the reactor facility. The PSAR **should include**~~includes~~ a deterministic safety analysis, a probabilistic safety assessment (PSA) and a hazards analysis **commensurate with the level of design**. **The PSAR should be developed commensurate with the level of design (for additional information, see section 4.5.1, Description of structures, systems and components).** The application should demonstrate that all levels of defence in depth are addressed, and should confirm that the facility's design is capable of meeting the applicable dose acceptance criteria and safety goals.
k.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.4.2, Postulated initiating events and 4.4.3, Deterministic safety analysis	The REGDOC states that "the safety analysis shall identify postulated initiating events…" and "the scope and classification of PIEs… shall meet the requirements specified in…" There is no statutory requirement for the safety analysis to identify postulated initiating events, nor is there any statutory requirement for the safety analysis to comply with the cited REGDOCs. Accordingly, these two sentences must be revised to reflect guidance, not requirement. Suggested Change: Revise Section 4.4.2 to 'The safety analysis should identify postulated initiating events (PIEs) using a systematic methodology … The scope and classification of PIEs in the application should meet the requirements specified in…'.	Text has been revised to add the statement "to the extent practicable commensurate with the level of design information". The PIEs are an integral part of a safety analysis. CNSC staff would not be able to complete their review of a licence to construct a reactor facility application without a safety analysis. The safety analysis can be commensurate with the level of design information.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Feedback on CNSC Response: Industry seeks further discussion on this point as a workshop item and requests the revised text be shared ahead of time so participants can offer CNSC staff a more fulsome, contextual review based on the actual changes. See related comments l, m, n, o and p. The disposition does not really answer industry's comment. It is agreed that a safety analysis is required for a licence to construct application. The issue is that specific aspects of the analysis should be a "should" and not a "shall." Otherwise, the requirements in this REGDOC become more restrictive than REGDOC-1.1.3. The suggested wording could be improved to read, "to the extent practicable commensurate with the level of design information available at the time of a construction licence application." This reflects the reality that detailed design will likely not be complete at the time of a first-of-a-kind LTC application. Accordingly, the level of safety analysis needs to reflect the available design maturity	Additional Response: The text of section 4.4.2 was clarified to add "To the extent practicable commensurate with the level of design information available at the time of a construction licence application," The text of section 4.4.3 was clarified to add "To the extent practicable commensurate with the level of design information".
l.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.4.2, Postulated initiating events and 4.4.3, Deterministic safety analysis	The REGDOC states that 'the application shall include a deterministic safety analysis … conducted in accordance with REGDOC-2.4.1.' There is no statutory requirement for the application to include a deterministic safety analysis, although it is acknowledged that the Class I NFR requires submission of a "preliminary safety analysis report". In addition, there is no statutory requirement for deterministic safety analysis to comply with REGDOC-2.4.1. Accordingly, this sentence must be revised to reflect guidance, not requirement. Suggested Change: Revise Section 4.4.3 to 'The application should include a deterministic safety analysis to evaluate and justify safety and the reactor facility, conducted in accordance with REGDOC-2.4.1, Deterministic Safety Analysis.'	Text has been revised to add the statement "to the extent practicable commensurate with the level of design information". CNSC staff would not be able to complete their review of a licence to construct a reactor facility application without a deterministic safety analysis. The deterministic safety analysis can be commensurate with the level of design information.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Feedback on CNSC Response: As per comment k, industry seeks further discussion on this point as a workshop item and requests the revised text be shared ahead of time so participants can offer CNSC staff a more fulsome, contextual review based on the actual changes. This REGDOC should not be more restrictive than REGDOC-1.1.3 in the level of requirements and guidance. Again, the suggested wording could be improved to read, "to the extent practicable commensurate with the level of design information available at the time of a construction licence application." This reflects the reality that detailed design will likely not be complete at the time of a first-of-a-kind LTC application. Accordingly, the level of safety analysis needs to reflect the available design maturity.	Additional Response: Proposed change to wording was accepted; please see additional response to comment k.
m.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.4.4, Hazard analysis and 4.4.5, Probabilistic safety analysis	The REGDOC states that "the applicant shall provide a hazard analysis that has been performed in accordance with the requirements of …" There is no statutory requirement for the application to include a hazard analysis, although it is acknowledged that the Class I NFR requires submission of a "preliminary safety analysis report". In addition, there is no statutory requirement for the hazard analysis to comply with the cited REGDOCs. Accordingly, this sentence must be revised to reflect guidance, not requirement. Suggested Change: Revise Section 4.4.4 to 'the applicant should provide a hazard analysis that has been performed in accordance with the requirements of …'.	Text has been revised to add the statement "to the extent practicable commensurate with the level of design information". CNSC staff would not be able to complete their review of a licence to construct a reactor facility application without a hazard analysis. The hazard analysis can be commensurate with the level of design information.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
n.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.4.4, Hazard analysis and 4.4.5, Probabilistic safety analysis	The REGDOC states that "the application shall include a probabilistic safety assessment (PSA) conducted in accordance with the requirements specified in REGDOC-2.4.2…" There is no statutory requirement for the application to include a PSA, although it is acknowledged that the Class I NFR requires submission of a "preliminary safety analysis report". In addition, there is no statutory requirement for the PSA to comply with REGDOC-2.4.2. Accordingly, this sentence must be revised to reflect guidance, not requirement. Suggested Change: Revise Section 4.4.5 to 'the application should include a probabilistic safety assessment (PSA) conducted in accordance with the requirements specified in REGDOC-2.4.2…'.	Text has been revised to add the statement "to the extent practicable commensurate with the level of design information". CNSC staff would not be able to complete their review of a licence to construct a reactor facility application without a probabilistic safety assessment. The probabilistic safety assessment can be commensurate with the level of design information.
o.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.4.6, Severe accident analysis	The REGDOC states that "the applicant shall demonstrate that a severe accident analysis has been performed in accordance with the requirements of …" There is no statutory requirement for the application to include a severe accident analysis, although it is acknowledged that the Class I NFR requires submission of a "preliminary safety analysis report". In addition, there is no statutory requirement for the severe accident analysis to comply with the cited REGDOCs. Accordingly, this sentence must be revised to reflect guidance, not requirement. Suggested Change: Revise Section 4.4.6 to 'the applicant should demonstrate that a severe accident analysis has been performed in accordance with the requirements of …'.	Text has been revised to add the statement "to the extent practicable commensurate with the level of design information". CNSC staff would not be able to complete their review of a licence to construct a reactor facility application without a severe accident analysis. The severe accident analysis can be commensurate with the level of design information.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
p.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.4.7, Summary analysis and 4.4.8, Event mitigation	The REGDOC states "the application shall provide the results of a review of event mitigation measures in accordance with the requirements of REGDOC-2.3.2…" There is no statutory requirement for the application to include the results of a review of event mitigation measures, although it is acknowledged that the Class I NFR requires submission of a "preliminary safety analysis report". In addition, there is no statutory requirement for such a review to comply with REGDOC-2.3.2. Accordingly, this sentence must be revised to reflect guidance, not requirement. Suggested Change: Revise Section 4.4.8 to 'the application should provide the results of a review of event mitigation measures in accordance with the requirements of REGDOC-2.3.2…'.	Text has been revised in both sections 4.4.7 and 4.4.8 to add the statement "to the extent practicable commensurate with the level of design information". CNSC staff would not be able to complete their review of a licence to construct a reactor facility application without a review of event mitigation measures in accordance with the requirements of REGDOC-2.3.2, *Accident Management*. The review can be commensurate with the level of design information.
q.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.5.3, Design principles and requirements	Section 4.5.3, Design principles and requirements, sub-section "Design for reliability" states "the application shall include the basis for reliability targets that meet the requirements in section 7.6 of REGDOC-2.5.2." There is no statutory requirement for the application to include a basis for reliability targets. In addition, there is no statutory requirement for that basis to comply with REGDOC-2.3.2. Accordingly, this sentence must be revised to reflect guidance, not requirement. Suggested Change: Revise Section 4.5.3, Design principles and requirements, Sub-section 'Design for reliability', to 'the application should include the basis for reliability targets that meet the requirements in section 7.6 of REGDOC-2.5.2.'	No change to text. CNSC staff would not be able to complete their review of a licence to construct a reactor facility application without the applicant including the basis for reliability targets that meet the requirements in section 7.6 of REGDOC-2.5.2, *Design of Reactor Facilities*, and REGODC-2.6.1, *Reliability Programs for Nuclear Power Plants*.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Feedback on CNSC Response: Industry seeks further discussion on this point as a workshop item. The basis for reliability may not be fully validated at time of LTC application, particularly for novel first-of-a-kind designs. The reliability targets for existing facilities have been developed over decades of component OPEX. Systems important to safety and their reliability targets are determined as per REGDOC-2.6.1 and the industry reliability program, where the input is the DSA and PSA. The requirements in this REGDOC need to be in alignment with that of REGDOC-1.1.3. Also, the reliability targets for monitoring are dependent on the testing and maintenance programs for their components.	Additional Response: Appendix B was updated to reflect the latest organization of specific areas.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
r.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.5.3, Design principles and requirements	Section 4.5.3, Design principles and requirements, sub-section "Radiation protection" states "the application shall include a description of the design approach adopted that demonstrates the facility design meets the requirements of the Radiation Protection Regulations and the radiation protection objectives and dose acceptance criteria in accordance with sections 4.1.1 and 4.2.1 of REGDOC-2.5.2." There is no statutory requirement for the application to include a description of the design approach, although it is acknowledged that GNSCR, Section 3(1)(e), requires that the application shall contain "the proposed measures to ensure compliance with the Radiation Protection Regulations." In addition, there is no statutory requirement for the facility design to comply with REGDOC-2.5.2. Accordingly, this sentence must be revised to reflect guidance, not requirement. Suggested Change: Revise Section 4.5.3, Design principles and requirements, sub-section "Radiation protection", to state "the application should include a description of the design approach adopted that demonstrates the facility design meets the requirements of the Radiation Protection Regulations and the radiation protection objectives and dose acceptance criteria in accordance with sections 4.1.1 and 4.2.1 of REGDOC-2.5.2."	No change to text. CNSC staff would not be able to complete their review of a licence to construct a reactor facility application without the applicant including a description of the design approach adopted that demonstrates that the reactor facility design meets the requirements of the *Radiation Protection Regulations* and the radiation protection objectives and dose acceptance criteria in accordance with sections 4.1.1 and 4.2.1 of REGDOC-2.5.2, *Design of Reactor Facilities*.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
s.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.5.5, Structure design	The REGDOC states that "the application shall present relevant information on the design of the site layout and on civil engineering works and structures associated with the nuclear facility, with sufficient detail for CNSC staff to verify that the design is in accordance with … REGDOC-2.5.2…" There is no statutory requirement for site layout to comply with REGDOC-2.5.2. (However, it is acknowledged that the Class I NFR, Section 3(a), requires that the application includes a "description of the site of the activity to be licensed".). Suggested Change: Revise Section 4.5.5, Structure design, to "the application should present relevant information on the design of the site layout and on civil engineering works and structures associated with the nuclear facility, with sufficient detail for CNSC staff to verify that the design is in accordance with … REGDOC-2.5.2…".	No change to text. CNSC staff would not be able to complete their review of a licence to construct a reactor facility application without the applicant submitting the relevant information on the design of the site layout and on civil engineering works and structures associated with the nuclear facility, with sufficient detail for CNSC staff to verify that the design is in accordance with REGDOC-2.5.2, *Design of Reactor Facilities*.
			<u>Feedback on CNSC Response:</u> Licensees seek clarity on what is meant by "sufficient detail?"	<u>Additional Response:</u> No change to text. Further articulation of 'sufficient detail' is an item that CNSC staff are currently working on. "Sufficient detail" can generally be expected to be project-specific, and staff do not wish to restrict options by being overly prescriptive.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
t.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.9, Environmental protection and 4.9.1, General considerations	The REGDOC states 'the application shall include a comprehensive set of environmental protection measures that meet the requirements of REGDOC-2.9.1.' There is no statutory requirement for the environmental protection measures to comply with REGDOC-2.9.1. (This comment acknowledges that the application is required to include 'proposed environmental protection policies and procedures', pursuant to the Class I NFR, Section 3(g).) Accordingly, this sentence must be revised to separate the guidance from the requirement. Suggested Change: Revise Section 4.9.1, General considerations, to 'the application shall include proposed environmental protection policies and procedures. The application should include a comprehensive set of environmental protection measures that meet the requirements of REGDOC-2.9.1.'	No change to text. CNSC staff would not be able to complete their review of a licence to construct a reactor facility application without the applicant including a comprehensive set of environmental protection measures that meet the requirements of REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures*.
			<u>Feedback on CNSC Response:</u> Industry seeks further discussion on this point as a workshop item. See related comment t. Unlike previous comments on RP/civil structures, it is premature to think that a "comprehensive list of environment protection measures" will be fully developed at the time of an LTC application. While some may design elements requiring engineering to be suitably advanced (and therefore appropriate for an LTC) others speak to programmatic/procedural aspects which may not be fully developed/implemented this early in the project. Again, this is more appropriate for LTO than LTC and this REGDOC needs to align with REGDOC-1.1.3.	<u>Additional Response:</u> The words 'comprehensive list' was replaced with 'set' from 'comprehensive list of environmental protection measures'.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
u.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.9.5, Protection of the public and 4.9.6, Environmental risk assessment	The REGDOC states 'the application shall include an environmental risk assessment.' There is no statutory requirement to complete or to submit an environmental risk assessment as part of an application for a licence to construct a nuclear facility. Accordingly, this sentence must be revised to reflect guidance, not requirement. Suggested Change: Revise Section 4.9.6 to read, 'an environmental risk assessment should be completed prior to licence to construct application.'	No change to text. CNSC staff would not be able to complete their review of a licence to construct a reactor facility application without the applicant including an environmental risk assessment.
			<u>Feedback on CNSC Response:</u> As per comment t, industry seeks further discussion on this point as a workshop item. Industry's concern has not been resolved. If there's no requirement, then how can CNSC staff reject an application if there isn't one? There is either a requirement or there isn't. Clarity is needed.	<u>Additional Response:</u> Please see the response to comment #68

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response

v.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.10, Emergency management and fire protection and 4.10.1, General considerations	The REGDOC states 'the application shall describe an emergency preparedness program that meets the requirements of: REGDOC-2.3.1 [and] REGDOC-2.10.1.' There is no statutory requirement for the emergency preparedness program to comply with REGDOC-2.3.1 and/or REGDOC-2.10.1. Accordingly, this sentence must be revised to reflect guidance, not requirement. This comment acknowledges the statutory requirement for an application to include 'the proposed measures to control releases of nuclear substances and hazardous substances into the environment', pursuant to the Class I NFR, Section 5(k).
			
			The REGDOC also states 'the application shall provide proposed timelines and milestones for development of provisions …' There is no statutory requirement for the application to provide timelines. Accordingly, this sentence must be revised to reflect guidance, not requirement.
			
			Suggested Change:
			Revise Section 4.10.1, General considerations, to read:
			• 'The application should describe an emergency preparedness program that meets the requirements of: REGDOC-2.3.1 [and] REGDOC-2.10.1.'
			• 'the application should provide proposed timelines and milestones for development of provisions ....'
				Text has been revised as follows:
				- To add clarity that the proposed emergency preparedness program will meet all requirements applicable to the construction phase
				- That the application ~~shall~~**should** provide proposed timelines and milestones ~~during~~**in anticipation of** fuel-in commissioning and reactor facility operation
				- To add clarity that:
				  - development of nuclear emergency plans can be completed in stages leading to a future licence application to load nuclear fuel into the reactor
				  - however, a comprehensive nuclear emergency program must be established prior to loading nuclear fuel into a reactor

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
w.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.11, Waste management and 4.11.1, General considerations	The REGDOC states 'the application shall provide proposed timelines and milestones for development of provisions for waste management during fuel-in commissioning and reactor facility operation.' There is no statutory requirement for the application to provide timelines and milestones for development of waste management provisions applicable to potential future licensed activity. Accordingly, this sentence must be revised to reflect guidance, not requirement. Suggested Change: Remove the section, as per the comment above. Otherwise, revise to 'the application should provide proposed timelines and milestones for development of provisions for waste management during fuel-in commissioning and reactor facility operation.'	Text regarding timelines and milestones has been removed
x.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.11.3, Waste characterization, 4.11.4, Waste minimization and 4.11.5, Decommissioning practices	(for section 4.11.5): The REGDOC states 'the application shall include a preliminary decommissioning plan for the work required to decommission the reactor facility, in accordance with REGDOC-2.11.2.' There is no statutory requirement for the preliminary decommissioning plan to comply with REGDOC-2.11.2. Accordingly, this sentence must be revised to reflect guidance, not requirement. However, this comment acknowledges the statutory requirement for the application to include a preliminary decommissioning plan, pursuant to Class I NFR, Section 3(k). Suggested Change: Revise Section 4.11.5, Decommissioning practices, to 'the application shall include a preliminary decommissioning plan for the work required to decommission the reactor facility. The preliminary decommissioning plan should be in accordance with REGDOC-2.11.2.'	Text has been revised to state that the application be in accordance with REGDOC-2.11.2, *Decommissioning*.
y.	Bruce Power, Canadian Nuclear	Section 4.12.1,	Licensees seek further clarity on the following:	1. Text has been revised to remove requirements that do not apply to the construction phase, and to add clarity and additional detail.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
	Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	General considerations	1. The REGDOC states 'the application shall describe a security program that meets the requirements' of REGDOC-2.12.1, Volume I, REGDOC-2.12.1, Volume II, REGDOC-2.12.2, REGDOC-2.12.3, and REGDOC-2.2.4. There is no statutory requirement for the security program to comply with any or all of these REGDOCs. Accordingly, this sentence must be revised to reflect guidance, not requirement. However, this comment acknowledges the statutory requirement for the application to include a description of elements of the security program, pursuant to NSR, Section 3. 2. The guidance for security-related information is not consistent with other guidance for sensitive information throughout the document. Specifically, Section 4.12.1 refers to 'Guidance Document on Confidential Filings.' However, in other sections of the REGDOC, reference is made to REGDOC-2.12.3 and the TBCS Policy on Government Security. References to guidance with respect to sensitive information should be consistent throughout the licence application guide. 3. The REGDOC states 'the application shall provide proposed timelines and milestones for development of provisions for security during fuel-in commissioning and reactor facility operation.' There is no statutory requirement for the application to provide proposed timelines for the development of activities that are relevant to a potential future licensed activity. Accordingly, this sentence must be revised to reflect guidance, not requirement. Suggested Changes: Revise this section: 1. To read, 'The application should describe a security program that meets the requirements' of REGDOC-2.12.1, Volume I, REGDOC-2.12.1, Volume II, REGDOC-2.12.2, REGDOC-2.12.3, and REGDOC-2.2.4. 2. To refer to REGDOC-2.12.3 instead of 'Guidance Document on	2. The guidance for sensitive information has been revised for consistency; the reference to the *Guidance Document on Confidential Filings* has been removed from section 4.12.1. 3. Text regarding timelines and milestones has been removed

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Confidential Filings.' 3. To read, 'The application should provide proposed timelines and milestones for development of provisions for security during fuel-in commissioning and reactor facility operation.' "	
z.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.12.4, Security practices, 4.12.5, Security training and qualification and 4.12.6, Cyber security	The REGDOC states 'the application shall describe the measures in place to ensure response workers are trained and capable of performing the duties described in Section 30 of the Nuclear Security Regulations and in accordance with [REGDOC-2.12.1, Volume I].' There is no statutory requirement for the security program to comply with REGDOC-2.12.1, Volume I and no need for this information during the construction phase. Suggested Change: Remove this section as this does not apply during the construction phase of a project.	Text has been revised for clarity and focuses on the activities under the licence to construct. See also response to comments #XX and XXI in table E.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
aa.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.13, Safeguards and non-proliferation	The REGDOC states that this section 'addresses the requirements' of the Canada/IAEA safeguards agreements (INFCIRC/164 and INFCIRC/164/Addendum 1). However, the safeguards agreements place no statutory requirements upon an applicant for a licence. Instead, the agreement between IAEA and the Government of Canada should be—and are—executed through legal requirements under the NSCA and through activities undertaken by the CNSC. Therefore, the REGDOC incorrectly implies that requirements of INFCIRC/164 and INFCIRC/164/Addendum 1 directly apply to the application. Instead, the obligation of the applicant is with respect to the NSCA alone. Note as well that INFCIRC/164 and INFCIRC/164/Addendum 1 were not cited in Section 1.3., Relevant legislation, nor in Appendix A, Legislative Clauses. In order to avoid confusion, the REGDOC should be revised to remove any implication that INFCIRC/164 and INFCIRC/164/Addendum 1 directly apply to the applicant and the application. However, this comment acknowledges the statutory requirements for the applicant and licensee to comply with the NSCA (doing so will ensure that Canada meets its obligation to the IAEA). Suggested Change: Revise to this section to contain guidance applicable to licence to construct, such as the DIQ; and remove the licence to operation application requirements.	Text has been revised as follows: ~~It also addresses the requirements of~~**These legislative clauses ensure that the CNSC is able to achieve conformity with measures of control and international obligations to which Canada has agreed, including** the following international protocols: • *Agreement between the Government of Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons* (IAEA INFCIRC/164) [49] • *Protocol Additional to the Agreement between Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non Proliferation of Nuclear Weapons* (IAEA INFCIRC/164/Add.1) [50] No change to the requirements. Canada is obligated to provide the IAEA access to the site and facility prior to "fuel in commissioning". During the licence to construct phase, the IAEA will require access to the site and facility to perform Design Information Verification, install safeguards equipment, verify nuclear material (once applicable), and confirm the absence of undeclared nuclear material and activities. Whether a description or summary, the application must demonstrate how the requirements from the CNSC's REGDOCs for safeguards and import/export control will be met at the start of the licence to construct phase.

	Reviewer	Section or Para.	Reviewer’s Comment and Proposed Change	Response
bb.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.13.1, General considerations and 4.13.2, Nuclear accountancy and control	The REGDOC states that 'the application shall describe how the arrangements address the requirements in REGDOC.2.13.2… and REGDOC-2.13.1… and are in accordance with … REGDOC-2.5.2.' There is no statutory requirement for the safeguards arrangements to comply with REGDOC-2.13.2, REGDOC-2.13.1, and/or REGDOC- 2.5.2. Accordingly, this sentence must be revised to reflect guidance, not requirement. However, this comment acknowledges that some statutory requirements may be embedded in any REGDOC. Any such statutory requirement would of course apply (not because it is cited in the REGDOC, but because it is a requirement under the NSCA)." Suggested Change: Revise Section 4.13.1, General considerations, to 'the application should describe how the arrangements address the applicable requirements in REGDOC.2.13.2… and REGDOC-2.13.1… and are in accordance with … REGDOC-2.5.2.'	No change to the “shall” statements. If the Commission issues a licence to construct a reactor facility, these regulatory documents will become part of the licensing basis. Therefore, the applicant “shall” describe how their arrangements address these requirements. Text has been revised throughout this regulatory document (REGDOC-1.1.2 Version 2) to clarify that applicants may propose alternative approaches for novel or innovative technologies.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
cc.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.14, Packaging and transport, 4.14.1, Package design and maintenance, 4.14.2, Packaging and transport program and 4.14.3, Registration for use	The REGDOC states that 'the applicant shall describe the measures in place to ensure compliance with all requirements of the *Packaging and Transport of Nuclear Substances Regulations, 2015*, and the *Transportation of Dangerous Goods Regulations*.' There is no statutory requirement for the application to describe arrangements in place to comply with the TDG Regulations. Accordingly, this sentence must be revised to reflect guidance, not requirement. However, this comment acknowledges the statutory requirement to describe the measures in place with respect to the *Packaging and Transport of Nuclear Substances Regulations, 2015*, pursuant to the GNSCR, Section 3(1)(e). Suggested Change: Revise Section 4.14.2, Packaging and transport program, to 'the applicant shall describe the measures in place to ensure compliance with all requirements of the Packaging and Transport of Nuclear Substances Regulations, 2015. The applicant should describe the measures in place to ensure compliance with the Transportation of Dangerous Good Regulations.'	The text has been revised as follows: "If applicable, the applicant shall describe the measures that will be in place to ensure compliance with all the requirements of the *Packaging and Transport of Nuclear Substances Regulations*, 2015 and Transport Canada's *Transportation of Dangerous Goods Regulations*."
dd.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 5.0, Other Matters of Regulatory Interest, 5.1, Reporting requirements and 5.2, Public information and disclosure	Licensees have the following concerns with the section on reporting requirements: 1. The title of the document has changed from 'Licence to Construct a Nuclear Power Plant' to 'Licence to Construct a Nuclear Reactor Facility' and thus including Class-1b nonpower reactor facilities. Yet this draft does not include reporting as per REGDOC-3.1.2, Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills. 2. The REGDOC states that 'the applicant shall describe how the reporting and trending programs, processes and procedures meet the	1. No change to text. All reactors are Class IA nuclear facilities. 2. Text has been revised to state: "The applicant ~~shall~~ **should** describe, **as applicable to the construction phase**, how the reporting and trending programs, processes and procedures ~~meet~~ **address** the requirements of REGDOC-3.1.1, *Reporting Requirements for Nuclear Power Plants* [22]." 3. This licence application guide (and all others in this series) are constructed according to the CNSC's SCA Framework and Regulatory Framework. The Regulatory Framework puts "reporting" under "Other Regulatory Areas". See the back cover of every regulatory document for a summary of the SCA Framework.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
		program	requirements of REGDOC-3.1.1.' There is no statutory requirement for the reporting program to comply with REGDOC-3.1.1. Additionally, it is not clear that REGDOC-3.1.1 should apply during licensed construction activities. Accordingly, the reference to REGDOC-3.1.1 should be removed, as it does not reflect requirement, and does not represent appropriate guidance. However, this comment acknowledges that statutory requirements for reporting do apply to applicants for a licence (e.g., GNSCR, Section 15) and to licensees in general. 3. The REGDOC lists 'reporting requirements' as an element of 'other regulatory areas.' Typically, reporting requirements are included as part of the 'operating performance' SCA (see, for example, Appendix B). For clarity and consistency, it would be appropriate to move reporting requirements to Section 4.3, Operating performance. Suggested Changes: CNSC staff is urged to amend this section to: 1. Address reporting for Class-1b non-power reactor facilities and include appropriate text for reporting under REGDOC-3.1.2, Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills. 2. Read, 'The applicant should describe how the reporting and trending programs, processes, and procedures meet the statutory reporting requirements under the NSCA.' 3. Move Section 5.1 to a sub-section within Section 4.3, Operating performance. MAJOR Impact on Industry: Lack of clarity could delay the licensing process and project schedules while overly prescriptive "guidance" could stifle innovative approaches.	

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
ee.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 5.0, Other Matters of Regulatory Interest, 5.1, Reporting requirements and 5.2, Public information and disclosure program	The REGDOC states 'the applicant shall describe how their proposed public information and disclosure program… meets the requirements in REGDOC-3.2.1.' There is no statutory requirement for the public information and disclosure program to comply with REGDOC-3.2.1. Accordingly, this sentence must be revised to reflect guidance, not requirement. However, this comment acknowledges the statutory requirement for the application to include a proposed public information and disclosure program, pursuant to the Class I NFR, Section 3(j). Suggested Change: Revise Section 5.2, Public information and disclosure program, to 'the applicant shall describe their proposed public information and disclosure program, which should meet the requirements in REGDOC-3.2.1.'	No change to text. CNSC staff would not be able to complete their review of a licence to construct a reactor facility application without the applicant including a description of their proposed public information and disclosure program.
			<u>Feedback on CNSC Response:</u> As per previous comments, this REGDOC should not be more restrictive than REGDOC-1.1.3.	<u>Additional Response:</u> No changes to text. A brief discussion was held to inform workshop participants of the regulatory origin of this requirement (*Class I Nuclear Facilities Regulations*, paragraph 3(j)).

Table E: Theme: This licence application guide applies to a construction project, not for ongoing operations
(this table consolidates all specific comments received that have been consolidated into comment #5 in table B, above)

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
I.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New	Section 2.5, Completing the licence application	Licensees have significant concerns with the following passages: 1. The REGDOC says the applicant "shall" submit improvement plans and "shall" identify standards to be met. Additionally, it says the applicant "shall" provide a performance assessment. The	Text has been revised for clarity. See response to table B, comment 12. For item 1, see response to table C, comment b. For item 2, The text pertaining to licence renewal has been removed

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
	Brunswick Power (NB Power), and Ontario Power Generation (OPG)		mandatory "shall" does not have a statutory basis. Unless REGDOC-1.1.2 is cited in a licence, the "shall" has no weight in this context 2. More importantly, improvement plans and performance assessments do not belong in a licence to construct. These are more appropriate during licence renewals, or licences to operate. The REGDOC is asking for information that would not exist for first constructors3. The need to cite 'other' codes and standards as per the 1st sentence of the 2nd paragraph should be clarified. Codes and standards are not regulatory documents, per se. Suggested Change: CNSC staff is urged to: 1. Either remove the references to improvement plans and performance assessments or note that, in the case of a licence renewal, 'the applicant should submit improvement plans' and where changes are planned, 'the applicant should identify the standard to be met.' 2. Correct Section 2.5 to note that, in the case of a licence renewal, 'the applicant should provide a statement of performance assessment where warranted.' 3. Amend the 1st sentence of the 2nd paragraph to read, 'The application should cite CNSC regulatory documents, and other codes and standards that will govern program objectives that demonstrate the applicant's ability to implement the safety and control measures.' MAJOR Impact on Industry: It is important to maintain a clear distinction between requirements and guidance in all aspects of the regulatory framework. By citing items like improvement plans and performance assessments, this draft does not seem to recognize these are construction projects not	

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			ongoing operations. First time constructors cannot be required to submit information that will not exist. A requirement to submit an improvement plan, if not warranted, will result in unnecessary project work.	
II.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.2, Management system	As per the previous comment, the level of detail expected in this section is unrealistic at time of licence to construct application. Large construction projects will typically involve multiple contractual partners including the licensee, technology developer and EPC organizations. Therefore, it is unlikely the requested detail will be finalized at the time of a licence to construct application. Suggested Change: The CNSC is urged to provide rationales, guidance, and examples on what information is to be provided at the various phases of a project including the construction, commissioning and operation stages. MAJOR Impact on Industry: A proponent's inability to provide requested detail at the time of a licence to construct application will delay licensing timelines and cause undue delays to projects.	No change to text. Ultimately, the applicant is responsible for oversight of their supply chain for goods and services. All applicants are expected to understand the management system programs, processes and procedures that have been or will be put in place to protect health, safety and the environment, and a description of the organizational management structure, the management system programs, processes and procedures that have been or will be put in place to protect health, safety and the environment, and a description of the organizational management structure (See also response in Table C, item iv)
			<u>Feedback on CNSC Response:</u> Industry seeks further discussion on this point as a workshop item. It seems there is a fundamental disconnect between CNSC expectations and how industry plans to execute major projects. Without guidance on what information is expected - or what level of detail is considered sufficient - this requirement is subject to interpretation impacting a project's timeline and cost.	<u>Additional Response:</u> No changes to text. CNSC is not intending to be overly restrictive in this area; however sufficient detail is needed to clearly indicate arrangements; roles and responsibilities within the applicant's organization; and arrangements with contractors and sub-contractors, as appropriate. See also response to comments 33 through 35. As per the *Class I Nuclear Facilities Regulations*, paragraph 5(c), applicants must submit a construction program, including the schedule. It is recognized that this schedule is subject to change as the project progresses.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
III.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.3, Organization	Licensees have a series of significant concerns and requests for clarity with the sub-section on Organization. Once again, this draft document is seeking information that is either overly broad, not available in the construction phase, speculative or geared toward existing, large-scale organizations. Suggested Change: CNSC staff is urged to revisit this entire section to ensure it seeks information that is applicable to all potential applicants and available at the time of a licence to construct application. MAJOR Impact on Industry: This document appears to have been written exclusively for current CANDU designs and construction by large utilities. Will there be another licence to construct for SMRs, or is this exclusive to all makes of nuclear models? This lack of clarity could weaken Canada's ability to capitalize on first-mover advantage as outlined in the SMR Roadmap.	No change to text. This section is intentionally broad to give applicants the flexibility for their organizational arrangements, including their contractors and subcontractors. Ultimately, the applicant is responsible for oversight of their supply chain for goods and services. (See also responses to Table C, item iv and to the previous comment in this table, item II
			<u>Feedback on CNSC Response:</u> Industry seeks further discussion on this point as a workshop item. If the level of detail and expectations is not clarified, it will result in delays to the licensing process and to projects depending on the interpretation.	<u>Additional Response:</u> Text has been revised to add clarity. The phrase "To the extent practicable" has been added to "the application should describe…".

	Reviewer	Section or Para.	Reviewer’s Comment and Proposed Change	Response
IV.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.3, Organization	Licensees believe the following is not appropriate guidance at this phase of a potential project: 'ensure the right resources are available at the right time with the right skills and experience to meet the core capabilities of the organization at all stages of the reactor facility’s lifecycle.' Suggested Change: Remove this reference. MAJOR Impact on Industry: This is overly broad at this phase of a potential project. A proponent’s inability to provide requested detail at the time of a licence to construct application will delay licensing timelines and cause undue delays to projects.	The text has been changed to: “the resource strategy that ensures resources are available, with the skills and experience to support the conduct of the licensed activity” This text provides guidance stating that the CNSC is looking for a strategy, and not to a level of detail that would cause undue delays to projects.
V.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.3, Organization	Licensees believe the following is not appropriate guidance at this phase of a potential project: 'In most cases, the applicant is also the responsible organization that will later operate the reactor facility.' Suggested Change: Remove this reference. MAJOR Impact on Industry: This is speculative and does not recognize that this may be different for the construction of SMRs.	The text has been revised; the paragraph has been deleted. The licensee is always responsible, regardless if the licensee is the same for the licence to construct compared to the licence to operate.
VI.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power	Section 4.1.3, Organization	Licensees believe the following is not appropriate guidance at this phase of a potential project: • “Top-level organizational charts with references to the full organizational charts (including the staffing levels)”. It’s unclear why staffing levels are pertinent for this application to the regulator. Staffing level can be dependent on many factors and set by business objectives.	Text has been revised as follows: - “including staffing levels” has been removed - The wording for resource strategy as changed as described in the response to comment IV, above This text provides guidance stating that the CNSC is looking for a strategy, and not to a level of detail that would cause undue delays to projects.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
	Generation (OPG)		• "The application should describe the resource strategy, indicating the quantity of resources and the mix of disciplines and skills required as construction progresses through the various phases of the project (that is, design, pre-construction, construction, commissioning and operation)." Is the same level of detail for resource identification required for all phases of licensing? It's unclear why resource strategies are pertinent for this application. Resources and the mix of disciplines can depend on many factors and are set by business objectives. Suggested Change: Remove the inclusion of staffing levels and resource strategy. MAJOR Impact on Industry: This section implies a minimum staff complement as required for a larger organization. This would start to drive business objectives and models that would render SMRs non-cost competitive. Staffing levels (i.e. minimum complement) are used by existing licensees to stipulate the minimum number of required resources to respond to a station emergency (at an operating facility). There is no such requirement for any facility personnel not credited in this function. Therefore, the number of staff outside of the "minimum complement" is at the discretion of the organization and not within the jurisdiction of the regulator. Similarly, requiring a resource strategy is inappropriate in this document. As per earlier comments, the regulator should not insert itself into the business functions of an organization as long as licensees can demonstrate that work is being performed to the expected quality standard by qualified individuals (irrespective of who employs them).	

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
VII.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.3, Organization	Licensees believe the following is not appropriate guidance at this phase of a potential project: 'verification that adequate organizational structures and resources will be in place to meet the nuclear safety management needs of the licensed facility or activity.' It is unclear what is implied by 'verification.' How is 'adequate' defined? In addition, this statement seems to focus solely on nuclear safety. It is equally relevant to maintenance, operation, other business functions, namely that the structure of the organization needs to needs of the business it is conducting. Suggested Change: Clarify what is meant by 'verification' or 'adequate.' Lack of clarity in expectation could cause delays to licensing process.	The text has been changed as follows: • the applicant's organizational structure and resources, including: ○ ~~verification that~~**plans to ensure** adequate organizational structure and resources will be in place

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
VIII.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.3, Organization	Licensees believe the following is not an accurate reflection of the industry's safety culture and inappropriate guidance at this phase of a potential project: "confirmation that the applicant is in control of the licensed facility and activities and will not be subject to undue influence by any other organization." How would this be practically implemented? Business objective and policies seek to control behaviours through code of conduct. Suggested Change: Remove this statement. MAJOR Impact on Industry: Implementation would be costly and hard to validate. At best, it creates an administrative burden for very little impact to nuclear safety at this stage of a project. Values can be informed through code of conduct policies. As written, this statement is counter to the industry's well-established safety culture as described by INPO/WANO and unnecessary to demonstrate at this phase.	Text removed.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
IX.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.3, Organization	Licensees believe the following is not appropriate guidance at this phase of a potential project: 'The design principles used to develop the organizational structure; some examples of design principles are: • number of layers of hierarchy • length of decision-making chains • scope of managerial control • policy for the use of contracted resources to supplement inhouse capability' It is hard to see the relevance of this to regulation. A business model and structure is to be determined by business objectives, which will change with time and circumstance. Suggested Change: Remove this statement and its supporting bullets. MAJOR Impact on Industry: This is overly broad and irrelevant at this phase of a potential project.	The text has been changed as follows: • the ~~design~~ principles used to develop the organizational structure; some examples ~~of design principles~~ are: ○ number of layers of hierarchy ○ length of decision-making chains ○ scope of managerial control ○ ~~policy for the~~ use of contracted resources to supplement in-house capability

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response

X.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.3, Organization	Licensees believe the following is not appropriate guidance at this phase of a potential project:
			'The approach taken to ensure the applicant has all the capabilities necessary to provide nuclear safety and ensure the integrity of the safety case, including how the applicant will retain sufficient in-house core capability to:
			• manage the licensed facility and activities
			• prevent degradation of the in-house core capability through over-reliance on contractors
			• maintain technical subject matter expertise for all topics necessary for nuclear safety,
			• including "intelligent customer" roles where expertise is contracted out
			• be an "intelligent customer" for items or services procured from the supply chain' (*please see [other comment] for a related concern with this particular bullet)
			
			This seems to be defining business objectives and organizational structure. A business may choose to maintain no internal capability services and may make use of other methods to fulfill services as an intelligent customer. This also inappropriately presumes a business model where core capabilities are always in house.
			
			Suggested Change:
			Remove this statement and its supporting bullets.
			
			MAJOR Impact on Industry:
			Implementation would be impractical and costly. This would start to drive business objective and models that would render SMR projects non cost-competitive.
				Text changed to
				
				• "how the applicant will retain sufficient in-house core capability to:
				  • manage the licensed facility and activities
				  • maintain subject matter expertise for nuclear safety, including "informed customer" capability, where expertise is contracted out and for procurement of items"
				
				This does not mean that a business cannot have external capability – but they must demonstrate that they have sufficient in-house core capability to ensure safety as documented in subsection 24.4 of the NSCA:
				
				(4) No licence shall be issued, renewed, amended or replaced — and no authorization to transfer one given — unless, in the opinion of the Commission, the applicant or, in the case of an application for an authorization to transfer the licence, the transferee
				(a) is qualified to carry on the activity that the licence will authorize the licensee to carry on; and
				(b) will, in carrying on that activity, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
XI.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.3, Organization	Licensees believe the following is not appropriate guidance at this phase of a potential project: "The application should describe the resource strategy, indicating the quantity of resources and the mix of disciplines and skills required as construction progresses through the various phases of the project (that is, design, preconstruction, construction, commissioning and operation)." Once again, this seems to be defining the managing of a business staffing levels, which will depend on how the business wishes to proceed in execution of a business model. This is beyond expectations for a management system outlined in CSA N286 and REGDOC-2.1.1. Suggested Change: Remove this statement or revise the document to more accurately recognize the level of detail available at the various phases of licensing. MAJOR Impact on Industry: Implementation would be impractical and costly. This would start to drive business objective and models that would render SMR projects non cost-competitive."	Text has been revised as follows: The application should describe how organizational effectiveness and safety performance will be measured, including the use of performance indicators.

	Reviewer	Section or Para.	Reviewer’s Comment and Proposed Change	Response
XII.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.1.4, Performance assessment, improvement and management review; Section 4.1.5, Operating experience; 4.1.7, Safety culture; 4.1.9, Business continuity; 4.2.2, Human performance program	Similar to [the comment for section 2.5], licensees believe the sections on Performance Assessment, OPEX, Safety Culture, Business Continuity and Human Performance do not belong in a licence to construct. These are more appropriate during licence renewals, or licences to operate. The REGDOC is asking for information that would not exist for first constructors. Suggested Change: Either remove the references to Performance Assessments, OPEX, Safety Culture, Business Continuity and Human Performance or note that, in the case of a licence renewal, applicants should submit information on these topics. MAJOR Impact on Industry: Although 'should' is stated, these sections imply that all aspects of these programs are required. Unless REGDOC-1.1.2 is cited in a licence, it cannot impose requirements. Again, this draft does not appropriately recognize these are construction projects, not ongoing operations. First-time constructors cannot be required to submit information that will not exist. This identical comment was submitted for sections 4.1.4, 4.1.5, 4.1.7, 4.1.9, and 4.2.2.	Text from these sections has been consolidated into sections 4.1.1 and 4.1.2 The CNSC believes that performance assessment, operational experience (OPEX), safety culture and human performance are important aspects that must be looked at by applicants. As one example, OPEX is available internationally on construction projects and is expected to be reviewed and addressed as applicable.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response

XIII.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.2.4, Personnel certification	Licensees believe the following is not appropriate guidance at this phase of a potential project: 'The application should describe the program and schedule established for the certification of personnel for work relating to fuel-in commissioning and operation of the reactor facility.'
			
			References to certified positions and fuel loading in a licence to construct application are misplaced and cause more confusion than clarity.
			
			Suggested Change:
			Remove this section.
			
			MAJOR Impact on Industry:
			This draft does recognize these are construction projects. This creates a large overlap of requirements (redundant) between Construction & Operating licences. As presently written, draft REGDOC-1.1.2 is nearly identical to REGDOC-1.1.3, Licence Application Guide: Licence to Operate a Nuclear Power Plant.
				Text revised to focus on:
				
				• a reference to or summary of the proposed management system and the concept of operation as they pertain to:
				  • the roles and responsibilities of the personnel employed as part of the minimum shift complement
				  • the roles and responsibilities of the personnel employed in positions immediately relevant to safety including, but not limited to, safety-sensitive and safety-critical positions
				  • the extent of human intervention in operations under normal, abnormal, and emergency conditions, including the potential impact of human actions and decisions on the safety of workers, the public, and the environment
				• an overview of any proposed simulator facility or system and the manner in which this simulator facility or system will be used to support personnel training
				• an overview, and an overview of the schedule for implementation, of the programs relevant to the selection, training and qualification of reactor operators and, where applicable, control room shift supervisors.
				
				CNSC staff believe the commenters meant "does NOT recognize…" and provided a response based on that interpretation.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
XIV.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.2.6, Work organization and job design	Licensees believe the section on Work Organization is not required at this phase of a potential project. Staffing levels and minimum complement considerations are not applicable for a construction site. They are business/financial considerations only and not related to nuclear safety. Nor is timeliness for construction. Suggested Change: Remove this section. MAJOR Impact on Industry: This creates a large overlap of requirements (redundant) between Construction & Operating licences. As presently written, draft REGDOC-1.1.2 is nearly identical to REGDOC-1.1.3, Licence Application Guide: Licence to Operate a Nuclear Power Plant.	Text has been revised; the opening paragraph of this section now states the following: The applicant should demonstrate that, **to the extent practicable,** the staffing levels **are adequate to** support~~ing~~ the safe construction and commissioning of the reactor facility ~~have been determined through a systematic analysis~~.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
XV.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.2.7, Fitness for duty; Sections 4.3.3, Safe operating envelope, 4.3.4, Outage management performance and 4.3.5, Accident and severe accident management and recovery; Sections 4.4, Safety analysis and 4.4.1, General consideration ; Section 4.5.3, Design principles and requirements	As per the previous comments, the sections on Fitness for Duty, Readiness for Operation, SOE, Outage Management, Accident and Severe Accident Management, Safety Analysis, Identification of Plant States & Operational Configuration are requirement for a Power Reactor Operator Licence. They are inappropriately included in guidance on how to apply for a licence to construct. In particular, the "Readiness for Operation" section expects a disproportionate amount of detail at time of application for a construction licence, particularly for a first-of-a-kind project such as an SMR. Suggested Change: Remove these sections. MAJOR Impact on Industry: This draft does appropriately recognize these are construction projects, not ongoing operations. Expectations for information of this kind, which is out of sequence for a potential project, would require significant resources with no corresponding improvement to nuclear safety. Any guidance in future drafts needs to provide some flexibility with regards to the level of development needed for a construction licence application. A proponent's inability to provide the requested detail at time of licence to construct application will delay licensing timelines and cause undue delays to projects. [CNSC's note: The identical comment was submitted for sections 4.2.7, 4.3.3, 4.3.4, 4.3.5, 4.4, 4.4.1, and 4.5.3.]	Text regarding personnel certification has been revised within Section 4.2.3. Sections 4.3.3, 4.3.4 and 4.3.5 have been removed. For section4.5.3, the following text has been added: "**To the extent practicable commensurate with the level of design information**". Other revisions have been made, to add clarity and address this comment. CNSC staff believe the commenters meant "does _not_ appropriately recognize…" and provided a response based on that interpretation.
XVI.	Bruce Power, Canadian Nuclear Laboratories	Sections 4.10, Emergency	Licensees understand that a limited fire protection program would be expected for construction, but not an emergency management program during the construction phase.	Text has been revised as follows: - to add a reference to CSA N1600:21, *General Requirements for Nuclear Emergency Management Programs*

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	(CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	management and fire protection and 4.10.1, General considerations	Also, the descriptions and requirements in this section should align with CSA N1600 - General Requirements for Emergency Management Programs. Suggested Change: Revise this section to: • Indicate that a limited fire protection programs would be expected for construction, but not a full emergency management program. • Add a reference to CSA N1600 and replace the list of four program elements in 4.10.1 with the following: a) program management; b) planning basis; c) communication; d) nuclear emergency response plan and procedures; e) nuclear emergency recovery plan and procedures; f) training; g) facilities and equipment maintenance; h) public awareness and education; and i) exercises." MAJOR Impact on Industry: This draft does not appropriately recognize these are construction projects, not ongoing operations. Expectations for information of this kind, which is out of sequence for a potential project, would require significant resources with no corresponding improvement to nuclear safety. Without a clear reference to CSA N1600, the requirements are open to interpretation and may not align with expectations.	- to clarify that the emergency preparedness program shall meet all requirements that are applicable to the construction phase in REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs*, and REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response* -

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(VII.	Global First Power	Section 4.10.2, Nuclear emergency preparedness and response	Per the note at the beginning of section 4.10, "This SCA includes conventional emergency and fire response." However, section 4.10.2 is on "Nuclear emergency preparedness and response" and is an identical copy of the similar section from REGDOC-1.1.3 (re Licence to Operate) Suggested Change: Section 4.10.2 should be removed from REGDOC- 1.1.2, otherwise will be very confusing for licence applicants and users of this REGDOC. Major Impact on industry: This draft does not appropriately recognize these are construction projects, not ongoing operations. Expectations for information of this kind, which is out of sequence for a potential project, would require significant resources with no corresponding improvement to nuclear safety.	- Text has been revised for clarity.
VIII.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.11, Waste management and 4.11.1, General consideration s	As per [the comment for section 4.4.1], the section on waste management is a requirement for a Power Reactor Operator Licence. It is inappropriately included in the guidance on how to apply for a licence to construct. Also, the following paragraphs contradict one another: • 'The waste management SCA covers internal waste-related programs that form part of the facility's operations up to the point where the waste is removed from the facility to a separate waste management facility.' • '…, and its transfer to the waste storage facility or an authorized facility.' One states the removal of waste from the facility is outside the scope of the SCA, the other includes the transfer of waste. Industry assumes the former is correct and that the latter should be removed from this SCA if the entire section is not removed.	Text has been revised for clarity, specific to the construction phase Requirements for transfer can be found in section 4.14, Packaging and transport.

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			Suggested Change: Remove this section. MAJOR Impact on Industry: During construction, waste management would be limited to conventional waste. As such, this draft does not appropriately recognize these are construction projects, not ongoing operations. Expectations for information of this kind, which is out of sequence for a potential project, would require significant resources with no corresponding improvement to nuclear safety. Any guidance in future drafts needs to provide some flexibility with regards to the level of development needed for a construction licence application. A proponent's inability to provide the requested detail at time of licence to construct application will delay licensing timeline and cause undue delay to projects.	
XIX.	Global First Power	Sections 4.11, Waste management and 4.11.1, General consideration s	Paragraph 1 of Section 4.11.1 requires the applicant to 'address management of hazardous substance wastes', i.e. not including radioactive waste recognizing that the application's scope is construction including fuel-out (or phase A) commissioning. Paragraph 2 of Section 4.11.1 then requires the application to 'provide proposed timelines and milestones for development of provisions for waste management during fuel in commissioning and reactor facility operation.' (thus, it is limited to timelines and milestones). However, the rest of Section 4.11.1 and the entire following sections 4.11.2 through and including 4.11.4 are almost identical with the corresponding sections of REGDOC-1.1.3 (for Licence to Operate) and notwithstanding that 'overall' could mean 'general' (see above), it seems that CNSC is requiring the construction licence application to include the same scope on waste management as for the operating licence application; that is - to include also	Text has been revised for clarity and to focus on the construction phase

	Reviewer	Section or Para.	Reviewer's Comment and Proposed Change	Response
			information on radioactive wastes (which contradicts the first paragraph of Section 4.11.1). Suggested Change: CNSC is requested to revise the entire sections 4.11.1 to 4.11.4 and scrub them to remove all unnecessary references to radioactive wastes and associated requirements/expectations, or limit requesting radioactive waste information only to 'timelines and milestones'. Otherwise, the entire section will remain very confusing for licence applicants and users of this REGDOC. MAJOR Impact on Industry: During construction, waste management would be limited to conventional waste. As such, this draft does not appropriately recognize these are construction projects, not ongoing operations. Expectations for information of this kind, which is out of sequence for a potential project, would require significant resources with no corresponding improvement to nuclear safety. Any guidance in future drafts needs to provide some flexibility with regards to the level of development needed for a construction licence application. A proponent's inability to provide the requested detail at time of licence to construct application will delay licensing timeline and cause undue delay to projects.	

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XX.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Section 4.12, Security	This section 4.12 is identical with the corresponding section from REGDOC-1.1.3. Therefore, it is not clear if the CNSC's expectations are identical for the two licence applications or, if different, what the differences would be. Clarification is needed on whether the scope would be limited for this phase and to extract the rest of the requirements from the current text. Sections 4.12.1 through 4.12.6, which are identical with REGDOC-1.1.3 content, should be left for that phase of licensing, for the applicant to comply with the requirements or provide the arguments that requirements are not applicable. Suggested Change: The guidance captured in this section should be specific to a licence to construct application. Section 4.12 should be reflective of a construction licence application and the fact that nuclear material will not be present. Furthermore, this section should be reflective of the pending changes to the Nuclear Security Regulations to move from a prescriptive regulation to a deterministic assessment based on risk. MAJOR Impact on Industry: This affects the scope of the application. The security response force requirements should be for this licensing phase and consider the unique features of the facility and reactor design.	Text has been revised for clarity, and focuses on the activities under the licence to construct. See also response to comment XXI, below, and to comment #z in table D.

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XXI.	Bruce Power, Canadian Nuclear Laboratories (CNL), Global First Power, New Brunswick Power (NB Power), and Ontario Power Generation (OPG)	Sections 4.12.4, Security practices, 4.12.5, Security training and qualification and 4.12.6, Cyber security	The REGDOC states 'the application shall describe the measures in place to ensure response workers are trained and capable of performing the duties described in Section 30 of the Nuclear Security Regulations and in accordance with [REGDOC-2.12.1, Volume I].' There is no statutory requirement for the security program to comply with REGDOC-2.12.1, Volume I and no need for this information during the construction phase. Suggested Change: Remove this section as this does not apply during the construction phase of a project.	Text has been revised for clarity, and focuses on the activities under the licence to construct. See also response to comment #z in table D.
XXII.	Global First Power	Section 4.13, Safeguards and non-proliferation	This section 4.13 is identical with the corresponding section from REGDOC-1.1.3, with the exception of the statement in this draft REGDOC-1.1.2 that the applicant is encouraged to early engagement by completing the IAEA safeguards design information questionnaire. This is confusing and leaves it to the applicant to figure out what the difference would be (if any) between the licence to construct and licence to operate applications. Suggested Change: The CNSC should provide the applicable/adequate guidance and clarify the differences and expectations compared to Licence to Operate application, i.e. to specify what is required for construction licence application and to what level of detail (in cases where the requirements for operating licence application may be the same). Impact on Industry: Major as this would affect the scope of the application.	Sections 4.13.2 through 4.13.5 have been removed and criteria consolidated in Section 4.13.1. The basic framework for safeguards is the same for licence to construct (REGDOC-1.1.2) and licence to operate (REGDOC-1.1.3). During both phases, the applicant or licensee must, *inter alia*, provide information on nuclear material accountancy, facilitate access and assistance to the IAEA, submit operational and design information, and support safeguards equipment, containment and surveillance. The additional guidance on early engagement is included in REGDOC-1.1.2 to ensure that applicants include an initial design information questionnaire at the time of initial application. An applicant for a licence to operate would have already established an initial design information questionnaire during the previous phase; requirements for updates to this document and the associated timelines are specified in REGDOC-2.13.1, *Safeguards and Nuclear Material Accountancy*.

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XIII.	Global First Power	Sections 4.14, Packaging and transport, 4.14.1, Package design and maintenance, 4.14.2, Packaging and transport program and 4.14.3, Registration for use	This section 4.14 is identical with the corresponding section from REGDOC-1.1.3. It is therefore not clear if the CNSC's expectations are identical for the two licence applications or if different, what the difference would be. We believe that because the Construction Licence includes only activities related to construction and fuel-out commissioning, the SCA on packaging and transport of nuclear substances to and from the facility do not apply, or at most, apply for a very limited scope (CNSC should define such scope). Suggested Change: The CNSC should better clarify the scope of this SCA specifically for construction licence application. At the minimum, CNSC is requested to include a note to recognize that the application covers construction and fuel-out commissioning and that any packaging and transport requirements will apply for nuclear substances that the applicant may intend to make use. Such substances would fall under the scope of "Nuclear Substances and Radiation Devices Regulations", and to any sealed sources and radionuclides identified in Table 1 of REGDOC-2.12.3. Impact on Industry: Major as this would affect the scope of the application.	Text has been revised as follows: - to add flexibility ("where applicable") - to specify "measures that will be in place" (see response to comment #cc in table D) The CNSC recognizes that not all construction sites will be dealing with nuclear materials or substances during the construction phase; however, some might be.