

Request for Information on the Proposed Implementation of REGDOC-1.1.1, *Licence to Prepare Site and Site Evaluation for New Reactor Facilities*

1. Preface

This document provides additional context on the proposed REGDOC-1.1.1, *Licence to Prepare Site and Site Evaluation for New Reactor Facilities*. The Canadian Nuclear Safety Commission (CNSC) welcomes comments on the request for information as well as on the proposed regulatory document itself.

Comments could include additional information on the regulatory document's implementation, potential impacts, or potential alternative approaches that meet the document's safety objectives. Should stakeholders decide to submit impact estimates, the CNSC encourages them to clearly state assumptions and provide enough detail to allow an independent observer to understand how the estimate was derived.

The CNSC will consider comments received. In fulfilling its mandate as a federal regulator, the CNSC must also consider values and principles that are difficult to quantify with a dollar value. It must also give consideration to fulfilling its responsibility under the *Nuclear Safety and Control Act* to disseminate objective scientific and regulatory information. In all cases, safety is the CNSC's top priority.

All comments received will become part of the public record.

2. Background

REGDOC-1.1.1, *Licence to Prepare Site and Site Evaluation for New Reactor Facilities*, sets out the requirements and guidance for site evaluation and a licence to prepare site (LTPS).

Site preparation activities for a new reactor facility are licensed under the *Nuclear Safety and Control Act* (NSCA). The information in an application for an LTPS addresses the following:

- provides the safety case for the site preparation phase of the project, which is incorporated into the licensing basis for the site preparation activities
- documents the conditions of the site and surrounding region that must be addressed in any technologies being considered and associated safety and control measures
- demonstrates that any technologies under consideration for the site will be able to withstand the conditions imposed on the nuclear facility by the site and its surroundings
- demonstrates the site is suitable for a reactor facility's full lifecycle (i.e., construction, operation, decommissioning)

Site evaluation for nuclear reactor facilities is integral to site preparation. Site evaluation involves the collection and analysis of data necessary to assess external natural and human-induced hazards, as well as both the impacts of the environment on the installation and the impacts of the installation on the environment. Site evaluation provides a systematic framework and methodology to provide information on:

- site characterization and impact of the environment on the facility
- impact of the facility lifecycle (including accidents) on the environment

- suitability of the location for the construction and operation of the facility

Site evaluation information and technical data are also carried through to subsequent facility lifecycle phases and activities, including design and the licences to construct and operate. For subsequent phases, the focus of a re-evaluation should be to confirm the site characteristics (in particular external events), and to assess the effects of the updated information.

The site evaluation content represents, in part, the CNSC's adaptation of the principles set forth by the International Atomic Energy Agency in NS-R-3, *Site Evaluation for Nuclear Installations*, and the topical safety guides associated with NS-R-3. The scope of REGDOC-1.1.1 also includes several aspects that NS-R-3 does not address, such as environmental protection, site security, and protection of prescribed information and equipment.

3. Objectives

Part A of REGDOC-1.1.1, *Requirements and Guidance for a Licence to Prepare Site for New Reactor Facilities*, codifies acceptable practices regarding site preparation, and provides requirements and guidance for an application for an LTPS. Appendix A of this regulatory document provides the accompanying licence application guide.

Part B of REGDOC-1.1.1, *Site Evaluation for New Nuclear Power Plants and Small Reactor Facilities*, codifies the requirements and guidance for site evaluation for nuclear power plants or small reactors. Appendix B of this regulatory document provides working-level requirements and guidance.

For existing reactor facilities, the information in Part B, particularly site characterization, should be considered during a periodic safety review. Through this, any notable changes in external hazards are considered and are taken account in the design and operation of the facility. Note that over the past few years, there have been changes in environmental conditions (e.g., flooding, drought and seismic events) that have impacted nuclear facilities.

Part B supersedes the previously published RD-346, *Site Evaluation for Nuclear Power Plants* and incorporates lessons learned from the Fukushima nuclear event of March 2011 to:

- clarify requirements and guidance language
- expand scope to include small reactor facilities using a graded approach
- address the relevant Fukushima Task Force recommendations (INFO-0824, *CNSC Fukushima Task Force Report*) with changes focused on the need for robust characterization of the site to include:
 - consideration of events to include multiple and simultaneous severe external events that could exceed the design basis
 - multiple and simultaneous reactor accidents
 - discussions around emergency planning and preparations for extreme events earlier in a project

4. Regulatory approach

The requirements and guidance for an LTPS and site evaluation are provided to support new licence applicants. The application for an LTPS is not dependent upon detailed design information or specifications of a facility design; however, it must provide enough information to

demonstrate that releases of radioactive and hazardous substances will be within limits claimed in the environmental assessment taking into consideration specific site characteristics, and meet all applicable regulatory requirements.

The information collected in the site evaluation process informs environmental risk assessments and applications for an LTPS. The results of the site evaluation and, in particular, the site characterization are considered in the facility design and supporting safety analysis, which are in turn assessed as part of the review of a construction licence application.

The site evaluation information is carried through to facility operation. Information gathered during site evaluation, including the assumptions and bounding envelope would be reconfirmed at the continuing operation phase.

An applicant or licensee may put forward a case to demonstrate that the intent of a requirement is addressed by other means, and demonstrate this case with supportable evidence.

Guidance contained in this document exists to inform the applicant, to elaborate further on requirements or to provide information to licensees and applicants on how to meet requirements. CNSC staff considers guidance when determining the adequacy of a submission. Any alternative approach is expected to demonstrate that the requirements have been met.

A graded approach, commensurate with risk, may be defined and used when applying the requirements and guidance contained in this regulatory document. The use of a graded approach is not a relaxation of requirements. With a graded approach, the application of requirements is commensurate with the risks and particular characteristics of the facility or activity. All criteria in REGDOC-1.1.1 are intended to be scalable to a smaller reactor facility, based on the safety case for the reactor facility.

5. Implementation

REGDOC-1.1.1 will become effective upon publication. New reactor facilities will be expected to follow the requirements and guidance in this regulatory document in their application for an LTPS and during their site evaluation activities. Licence applications for new small reactor facilities will be expected to follow the requirements and guidance as applicable under a graded approach.

When preparing the application for LTPS for new reactor facilities, the applicant is to address the information requirements listed in LTPS and site evaluation. Site evaluation also supports environmental risk assessments done under the NSCA and as required under the *Canadian Environmental Assessment Act, 2012*.

The results of the site evaluation and, in particular, the site characterization are considered in the facility design and supporting safety analysis. These are assessed in turn as part of the review of a construction licence application.

Information gathered during site evaluation, including the assumptions and bounding envelope (if used), would be reconfirmed as part of the construction licence application process, the operating licence application process and periodically during operation.

For existing reactor facilities, REGDOC-1.1.1 would also be considered as part of the suite of modern codes and standards during a periodic safety review. By doing this, knowledge of site

characteristics resulting in any notable changes in external hazards is considered and taken into account in the design and operation of the facility. Part B of REGDOC-1.1.1 will be included in the recommendations and guidance section of a licensee's licence conditions handbook.

6. Potential impacts

The CNSC welcomes information on the potential impacts to the regulated community or alternative approaches to meeting the document's objectives. Interested stakeholders may provide information about the potential impacts of incorporating part B of REGDOC-1.1.1 in a periodic safety review. This could include, for example, site characterization aspects.

Codifying acceptable practices for site preparation and site evaluation provides clarity to applicants and licensees, which, in turn, is expected to result in complete applications, and therefore both an efficient and effective regulatory review.

For current licensees, many of the areas addressed in this regulatory document have already been taken into account in the reactor facility's safety case.

7. Feedback requested

Please submit comments or feedback to the CNSC in one of the following ways:

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- Mail: Canadian Nuclear Safety Commission
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