



Summary of CNSC Pre-Licensing Review

Assessment of the NWMO Mark II Used Fuel Container

February 2020

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1.0 Introduction

The Canadian Nuclear Safety Commission (CNSC) regulates 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.

As a best practice, and at the request of potential future licence applicants, the CNSC may get involved early in a proposed new nuclear project to provide information and guidance on the regulatory requirements and licensing process before the submission of a licence application and the initiation of the environmental assessment process. CNSC staff can provide the optional service of a pre-licensing review to future licence applicants. Potential applicants can use this feedback to increase regulatory certainty.

The Nuclear Waste Management Organization (NWMO) is the implementer for the deep geological repository (DGR) for Canada's used nuclear fuel. No licence application has been submitted at this time; however, the CNSC signed a service arrangement with the NWMO to provide regulatory guidance in relation to the adaptive phased management approach.

This pre-licensing assessment of the NWMO's Mark II used fuel container (UFC) does not involve issuing a licence under the *Nuclear Safety and Control Act* and is not required as part of the licensing process for the DGR. The conclusions do not bind or otherwise influence the decisions made by the Commission.

2.0 Summary

CNSC staff performed a pre-licensing review of the NWMO's submissions and evaluated the adequacy of the NWMO's treatment of 14 focus areas that are relevant to the design of engineered containers for used fuel. The review followed the process described in REGDOC-3.5.4, *Pre-Licensing Review of a Vendor's Reactor Design* (formerly GD-385), and was adapted to support the review of only one component (UFC) of the engineered barrier system for the DGR.

The assessment provided NWMO staff with early feedback on their design intent for the UFC and gave them the opportunity to learn more about the CNSC's oversight.

Considering the 14 focus areas examined during this review:

- CNSC staff are satisfied that in 11 areas, the NWMO's design intent complies with CNSC regulatory requirements and meets CNSC expectations for a high-level waste container to be used in Canada.
- However, in three focus areas, CNSC staff identified eight occurrences where a gap exists. A gap is an instance where the design intent of the UFC diverges from documented CNSC requirements and expectations or where insufficient information was provided. Specifically, gaps were identified in the following focus areas:
 - criticality
 - supporting research and development program

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- structural analysis

For the proponent's benefit, staff have also documented a number of observations (instances where the NWMO's design intent is unclear or would benefit from improvement) and comments (positive findings and others intended to assist the NWMO in improving its design processes and/or development activities for the UFC).

For questions about the review, contact cnscc.info.ccsn@canada.ca.