**Integration Group for the Safety Case (IGSC) Symposium 2024***MOVING TOWARDS THE CONSTRUCTION OF A SAFE DGR – GETTING REAL*

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| **Abstract Title:** Development of a Site-Specific Safety Case for a Canadian Deep Geological Repository for Used Fuel. | |
| **Abstract (300-500 words):**  The Nuclear Waste Management Organization (NWMO) is responsible for the implementation of Adaptive Phased Management, the federally approved plan for the safe long-term management of Canada’s used nuclear fuel. Under this plan, used nuclear fuel will ultimately be placed within a deep geological repository (DGR) in a suitable host rock formation. Currently, two potential host siting areas, the Wabigoon Lake Ojibway Nation – Ignace area (also referred to as the Revell Site) and the Saugeen Ojibway Nation – South Bruce area (also referred to as the South Bruce Site), remain in the site selection process. A single site is expected to be selected in 2024.  Following the site selection decision, the NWMO is planning to submit an Impact Statement (IS) and a Licence to Prepare Site (LTPS) application as an integrated submission to the Impact Assessment Agency (IAA) and the Canadian Nuclear Safety Commission (CNSC). A key component of the submission is the safety case. The safety of the repository is based on the combination of the geology, engineered design, careful operations, and quality assurance processes including review and monitoring. The ability of the repository to safely contain and isolate used nuclear fuel is achieved by multiple barriers, these being the ceramic used fuel pellet, the fuel sheath, the robust long-lived container, a series of clay-based seals and backfill material, and the rock formation within which the repository will be located.  Throughout the site selection process, NWMO has been advancing the development of safety assessment and has completed illustrative or generic safety post-closure and pre-closure safety assessments for a conceptual DGR designs located in hypothetical rock formations (NWMO 2017, NWMO 2018), in order to understand the key factors relevant for safety, and to develop the approaches to safety assessment for a candidate site.  Since some of the earlier generic safety assessments were completed, the repository design concepts have further advanced. The NWMO has been assessing the potential suitability of the Revell and South Bruce Sites, and preliminary data from the borehole drilling are available for a preliminary site-specific estimate of the repository safety at the two siting areas.  This paper will provide an overview of the components of a site-specific safety case supporting NWMO’s submission. Emphasis will be given to the approaches used, experience gained transitioning from generic to site-specific safety assessments and uncertainties remaining at this initial phase of the project.  **References**  NWMO. 2017. Postclosure Safety Assessment of a Used Fuel Repository in Crystalline Rock. Nuclear Waste Management Organization Report NWMO-TR-2017-02. Toronto, Canada.  NWMO. 2018. Postclosure Safety Assessment of a Used Fuel Repository in Sedimentary Rock. Nuclear Waste Management Organization Report NWMO-TR-2018-08. Toronto, Canada | |