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THE DEEP BOREHOLE DISPOSAL METHOD AND AN INTERNATIONAL DEMONSTRATION PROJECT PROPOSAL FOR AUSTRALIA

Deep borehole disposal (DBD) is a promising concept for the safe and long-term disposal of radioactive waste. This paper presents a proposal for a demonstration project located in Western Australia, highlighting the potential of the concept as a viable solution for the management of radioactive waste; this is in context of Tellus receiving indigenous approval for a DBD project and being in process of finalizing development approvals to start this project in connection with its proposed partner CSIRO (funding pending). DBD involves the emplacement of waste in deep, stable geological formations, providing multiple barriers for containment and isolation. By utilising the geological stability and impermeability of deep boreholes, DBD offers enhanced safety and security while minimising environmental impact. The proposed demonstration project aims to assess the feasibility of DBD in the Australian context. Western Australia possesses geological conditions suitable for deep borehole disposal, making it an ideal location for this demonstration. The project includes three key components: site selection, engineering design and comprehensive safety analysis. Site selection involves geological surveys to identify appropriate rock formations capable of providing sufficient isolation and containment. Engineering design focuses on borehole construction, waste emplacement, and monitoring systems, ensuring the integrity and stability of the disposal system. The safety analysis includes risk assessment, long-term performance evaluation, and contingency planning. The demonstration project will serve as a valuable opportunity to engage stakeholders and the public, fostering transparency and addressing concerns related to waste disposal. It will provide valuable insights into the technical, environmental, and socio-economic aspects of implementing DBD, enabling informed decision-making for future management strategies and waste management initiatives in the country. Furthermore, this project will contribute to the broader international dialogue on safe and sustainable disposal options for radioactive waste, promoting knowledge sharing and collaboration. The DBD concept, with its inherent safety features and potential for deep geological isolation, offers a promising approach to addressing the challenges of radioactive waste management. The paper outlines the deep borehole disposal concept and presents a proposal for a demonstration project in Western Australia, demonstrating the feasibility and potential of DBD as a long-term solution for the safe disposal of radioactive waste.

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