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Deep Isolation: An Innovative Horizontal Drillhole Solution

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Deep Isolation brings technical innovation and creative design to the nuclear waste disposal impasse. Deep Isolation offers a solution for safe, secure, and permanent deep geological disposal of nuclear waste while reducing the time and cost of licensing, packaging and transportation. Deep Isolation uses established directional drilling technology from the oil and gas industry to drill a vertical drillhole 1 km to 2 km deep that transitions to a horizontal drillhole 1 km to 3 km in length. The target disposal media are geologic formations whose stability has endured for millions of years. Deep Isolation proposes the direct disposal of spent nuclear fuel assemblies –or other high-level waste –in specially designed canisters in the horizontal section of the drillhole. Disposal of nuclear waste in horizontal drilled holes increases the effectiveness of both the engineered and natural barriers preventing the release of radionuclides from the nuclear waste into the biosphere. The availability of this suitable geology throughout the world allows for disposal at multiple locations. The horizontal emplacement allows for appropriate spacing given the heat generation of the canisters and minimizes the potential migration of radioactive contamination. Deep Isolation is committed to listening to and learning from the public and interested parties in the pursuit of disposal solutions. As such, our approach mirrors our values of openness and transparency. At present, Deep Isolation is actively listening to and exploring public and stakeholder attitudes toward the deep horizontal drillhole disposal concept more generally. Recently, Deep Isolation completed a self-funded demonstration of its technology. A prototype canister was placed into the horizontal section of an existing drillhole. The canister was released, and the installation equipment returned to the surface. Subsequently, the recovery equipment was then sent into the drillhole, captured the canister and returned to the surface successfully demonstrating retrievability.

Do you wish to enter the YGE SFM19 Challenge?

Country or International Organization

United States of America

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