Are deep boreholes an option for disposal of high-level radioactive waste in Germany?

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A commission on the storage of highly radioactive materials was set up in 2014 to propose a site selection procedure for final disposal of high-level radioactive waste in Germany.

According to the law and safety requirements a geological disposal in a mine is ranked currently as preferred and recommended option. Another option which could be declared by the commission for following up may be geological disposal using deep boreholes. In two workshops the option of deep boreholes for disposal have discussed in 2015 [1], [2]. Furthermore, a field test as a feasibility study for borehole disposal has been awarded currently by Departement of Energy in the United States.

Using deep boreholes can have some advantages in long term safety because the high-level radioactive waste (HAW) is buried down to 5 000 m deep with a ample distance between the HAW and the biosphere. Furthermore deep boreholes may take advantage of multiple geologic barriers as safety features. Open questions are concerned with technological feasibility, designing of containers, operational safety and compliance with regulatory requirements such as retrievability and recovery.

The presentation will show and summarize the concept, technology and findings of the expert assessment prepared for the commission on the storage of highly radioactive materials [3].

[1] Bracke G.; Schilling F.; Müller B.; Hurst S.; Merkel B. (Hg.) (2015): Proceedings of the Workshop “Final Disposal in Deep Boreholes Using Multiple Geological Barriers: Digging Deeper for safety”. Berlin, June 2015. Köln: GRS gGmbH (GRS-405). [2] Nuclear Waste Technical Review Board (NWTRB) (2015): International Technical Workshop on Deep Borehole Disposal of Radioactive Waste. October 20-21, 2015, Board Workshop. Washington, DC, www.nwtrb.gov. [3] Bracke G. *et al*., (2016), Tiefe Bohrlöcher (Deep Boreholes), www.bundestag.de/endlager.